BLM

Desert Harvest Solar Project

Final Environmental Impact Statement and Proposed California Desert Conservation Area Plan Amendment

CACA-49491
Publication Index #: BLM/CA/ES-2013-003+1793
DOI-BLM-CA-D000-2012-0004-EIS

November 2012

United States
Department of the Interior
Bureau of Land Management
Palm Springs Field Office
Palm Springs, CA

Cover Photo: View of the solar facility site from Kaiser Road

Desert Harvest Solar Project
Final Environmental Impact Statement
and
Proposed California Desert Conservation Area Plan Amendment

Prepared by
U.S. Department of the Interior
Bureau of Land Management
Palm Springs–South Coast Field Office
Palm Springs, California

ABSTRACT

DESERT HARVEST SOLAR PROJECT
Final Environmental Impact Statement and Proposed CDCA Plan Amendment

Lead Agency: U.S. Bureau of Land Management

Cooperating Agency: U.S. National Park Service, County of Riverside

California Environmental Quality Act Lead Agency: County of Riverside

Title: EDF Desert Harvest Solar Project, Riverside County, California

Contact: Mr. Frank McMenimen, Palm Springs/South Coast Field Office, 1201 Bird Center Drive, Palm Springs, CA 92262

Web Site:
http://www.blm.gov/ca/st/en/fo/palmsprings/Solar_Projects/Desert_Harvest_Solar_Project.html

Public Review Period and CDCA Plan Amendment Protest Period: November 2, 2012 to December 3, 2012

Instruction for Lodging a Protest:
http://www.blm.gov/pgdata/content/wo/en/prog/planning/planning_overview/protest_resolution.html

Abstract: This Environmental Impact Statement addresses the U.S. Bureau of Land Management's (BLM) consideration of issuance of a right-of-way grant to EDF Renewable Energy for the construction, operation, maintenance, and decommissioning of a 150- megawatt photovoltaic solar energy facility and generation-intertie transmission line (gen-tie line). The project would be located in Riverside County, California, near the unincorporated community of Desert Center on land administered by the BLM.

The Environmental Impact Statement analyzes seven solar facility alternatives and five gen-tie line alternatives. The solar facility alternatives are designated as follows: (1) No Action (No Plan Amendment), in which the application would be denied and current management of the site would be maintained; (2) the application would be denied and the CDCA Plan would be amended to declare the site suitable for solar energy development; (3) the application would be denied and the CDCA Plan would be amended to declare the site unsuitable for solar energy development; (4) BLM would grant the Applicant a right-of-way (ROW) for the project as proposed; (5) BLM would grant the Applicant a ROW for the project excluding the 47-acre portion of the site that is within the Palen-Ford Wildlife Habitat Management Area; (6) BLM would grant the Applicant a ROW for the project excluding the 155-acre southern parcel of the project and a 9-acre portion of the northern parcel that contains a sensitive plant species; (7) BLM would grant the Applicant a ROW as described under Alternative 6, but with taller solar panels. Gen-tie alternatives are designated as follows: (A) No Gen-Tie, in which the gen-tie line would not be constructed and current management of the site would be maintained; (B) The gen-tie line would be approved and would share transmission towers with the approved Desert Sunlight Solar Farm (DSSF); (C) The gen-tie line would be constructed on separate towers parallel to DSSF towers; (D) The gen-tie line would be constructed in a different, slightly shorter alignment; (E) The gen-tie line would be constructed in a different, slightly shorter alignment on a larger proportion of BLM land than Alternative D. Alternatives 4 through 7 and B through E would require an amendment to the CDCA Plan to find the project area suitable for solar development and allow a high-voltage transmission line outside of a federally designated utility corridor.

The proposed project or any of the action alternatives is anticipated to result in substantial adverse effects to air resources from emissions of particulate matter (PM10), volatile organic compounds (VOC), carbon monoxide (CO), and oxides of nitrogen (NOx); substantial adverse effects to biological resources, including vegetation habitat, special-status plants, habitat fragmentation, and displacement of wildlife; adverse effects to historic properties; substantial adverse cumulative effects to lands and realty from large-scale land conversion; substantial adverse noise effects from an increase in traffic-related noise levels along Kaiser Road; and substantial adverse effects to visual resources and recreation, due to degradation of the visual character of the landscape.

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Palm Springs – South Coast Field Office
1201 Bird Center Drive
Palm Springs, CA 92262
www.ca.blm.gov

In Reply Refer To:
2830-03 (P)
CACA-049491
CAD000.06/CAD060

Dear Reader:

Attached for your review and comment is the Final Environmental Impact Statement / Proposed California Desert Conservation Area Plan Amendment (Final EIS / Proposed CDCA Plan Amendment) for the Desert Harvest Solar Project for the California Bureau of Land Management (BLM) Palm Springs-South Coast Field Office. The BLM prepared this document in accordance with the National Environmental Policy Act of 1969 (NEPA), as amended, the Federal Land Policy and Management Act of 1976 (FLPMA), implementing regulations, the BLM's Land Use Planning Handbook (H-1601-1), and other applicable law and policy.

The Applicant's proposed Desert Harvest Solar Project, a 150-megawatt solar photovoltaic facility would be sited on 1,208 acres of BLM-managed lands north of the community of Desert Center in Riverside County, California. An associated 220-kilovolt generation-intertie transmission line would be sited within a 204-acre right-of-way on BLM-managed land and 52 acres of non-BLM managed land, which would extend from the solar facility site to the planned Red Bluff Substation. The Final EIS / Proposed CDCA Plan Amendment and supporting information are available on the project web site at: http://www.blm.gov/ca/st/en/fo/palmsprings/Solar_Projects/Desert_Harvest_Solar_Project.html

The BLM encourages the public to provide information and comments pertaining to the analysis presented in the Final EIS / Proposed CDCA Plan Amendment. Comments will be accepted for thirty (30) calendar days following the Environmental Protection Agency's publication of its Notice of Availability in the *Federal Register*. Announcement will also be made through the local news media. The BLM can best use your comments and resource information submissions if received within the review period. BLM's resource management planning regulations at 43 CFR 1610.5-2 specify the required elements for filing a timely protest. The BLM must resolve any protests on the proposed plan amendment before issuing a decision. If no changes to the Final EIS are warranted based on the comments, the BLM will prepare a Record of Decision (ROD) that documents the selected alternative and specific mitigation measures.

Comments may be submitted electronically at: cadesertharvest@blm.gov. Comments may also be submitted by mail to: Frank McMenimen, Palm Springs/South Coast Field Office, 1201 Bird Center Drive, Palm Springs, CA 92262. To facilitate analysis of comments and information submitted, we strongly encourage you to submit comments in an electronic format.

Your review of and comments on the content of this document are critical to the success of this planning effort, and we request that you make your comments as specific as possible. Please include suggested changes, sources, or methodologies and reference a section or page number whenever possible.

Before including your address, phone number, e-mail address, or other personal identifying information in your comment, be advised that your entire comment, including your personal identifying information, may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

Copies of the Final EIS / Proposed CDCA Plan Amendment have been sent to affected federal, State, and local government agencies, as well as affected Tribal governments. The following BLM offices have copies available for public inspection: the BLM California Desert District, 22835 Calle San Juan De Los Lagos, Moreno Valley, CA 92553; the BLM Palm Springs/South Coast Field Office (see address above); and the BLM California State Office, 2800 Cottage Way, Sacramento, California 95825.

Thank you for your continued interest in the Final EIS / Proposed CDCA Plan Amendment. We appreciate the information and suggestions you contribute to the planning process. For additional information or clarification regarding this document or the planning process, please contact Frank McMenimen, Project Manager, at the BLM Palm Springs/South Coast Field office at 760.833.7150, or email fmcmenimen@blm.gov.

Sincerely,

John R. Kalish
Field Manager

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EXECUTIVE SUMMARY

ES.1 BACKGROUND AND PROJECT OVERVIEW

This Final Environmental Impact Statement (EIS) and Proposed Plan Amendment (PA) analyzes the impacts of EDF Renewable Energy's[1] (EDF or Applicant) Desert Harvest Solar Project (DHSP) and incorporates public comments submitted by agencies, groups, tribes, individuals, and the project Applicant on the Draft EIS. In compliance with the National Environmental Policy Act (NEPA), the Bureau of Land Management (BLM) prepared this EIS to inform the public about the Proposed Action and to meet the needs of federal, state, and local permitting agencies in considering the project.

The Applicant filed for a right-of-way (ROW) authorization request with the BLM to construct, operate, maintain, and decommission a 1,208-acre, 150-megawatt (MW) solar energy project and 220-kilovolt (kV) generation-intertie transmission line (gen-tie line). Associated with its consideration of the project, the BLM is also proposing to amend the California Desert Conservation Area (CDCA) Plan (BLM 1980), as amended (CDCA Plan) to find the project site suitable for solar electricity generation and to allow a high-voltage transmission line outside of a federally designated utility corridor.

Because the County of Riverside has the authority to issue local permits for the proposed gen-tie line alternatives, this EIS has been prepared to a standard that complies with all requirements of the California Environmental Quality Act (CEQA) under Section 15221 of the CEQA Guidelines. CEQA Responsible Agencies and other readers interested in the CEQA compliance components of this EIS are directed to the CEQA Readers' Guide in Section 1.8.

The regional context for the proposed DHSP is shown in Figure 1-1 (see Appendix A for all figures). The Applicant proposes to construct, operate, maintain, and decommission the DHSP in Riverside County, California, near the unincorporated community of Desert Center. This Final EIS and Proposed Plan Amendment presents the potential effects of the Proposed Action and alternatives on BLM-administered lands and other affected lands and resources. It also discusses mitigation measures that, if adopted, would avoid, minimize, or mitigate the adverse environmental impacts identified.

The proposed solar facility would consist of several components. A main generation area would include photovoltaic (PV) arrays, a switchyard, inverters, overhead lines, and access corridors. The solar facility would also include an operations and maintenance facility, an on-site substation and switchgear. Site security, fencing, and lighting will protect the facility.

The proposed 220-kV gen-tie line would transmit the electricity generated to the regional transmission system through the Red Bluff Substation, where the power from the proposed solar facility would be stepped up and fed into Southern California Edison's existing Devers Palo Verde No. 1 high-voltage transmission line.

For the solar facility and gen-tie line, the following alternatives are considered in this EIS:

[1] In the Draft EIS, enXco Development Corporation (enXco) was identified as the applicant. Since the publication of the Draft EIS, enXco's company name has changed to EDF Renewable Energy (EDF). This new company name is used in this Final EIS.

- A No Action alternative and two No Project Alternatives. Of the two No Project Alternatives, one would amend the CDCA Plan to find the site suitable for solar energy, and the other would amend the CDCA plan to find the site unsuitable for solar energy.
- Four solar project configurations – Proposed Solar Project, Solar Project Excluding the Palen-Ford Wildlife Habitat Management Area (WHMA), Reduced Footprint Solar Project, and High-Profile Reduced Footprint Solar Project; and
- Four gen-tie line configurations – Proposed Gen-Tie Line (Shared Towers), Separate Transmission Towers within Same ROW, Cross-Valley Alignment, and New Cross-Valley Alignment.

The solar facility alternatives would be located exclusively on BLM-administered land. The gen-tie alternatives would be located on a combination of BLM-administered land, land owned by the Metropolitan Water District of Southern California, land owned by the County of Riverside, and private land.

ES.2 LEAD AND COOPERATING AGENCY ROLES AND RESPONSIBILITIES

Bureau of Land Management

The BLM is the Lead Agency under NEPA. As part of the Agency's responsibilities under Title V of the Federal Land Policy and Management Act (FLPMA; 43 U.S.C. 1761), the BLM must respond to the application for a ROW grant to construct, operate, maintain, and decommission a the DHSP on public lands in compliance with FLPMA, BLM ROW regulations, and other applicable federal laws. The BLM will decide whether to approve, approve with modification, or deny issuance of a ROW grant to the Applicant for the DHSP. The BLM may include any terms, conditions, and stipulations it determines to be in the public interest, and may modify the proposed use or location of proposed facilities (43 CFR 2805.10(a)(1)). Because the BLM's decision is considered a federal action with the potential for significant environmental impacts, NEPA requires the preparation of an EIS to evaluate the impacts of the Proposed Action (granting the ROW as in the application), alternative actions, and no action. In connection with its consideration of the project, the BLM is also considering amendments to the CDCA Plan. If the BLM decides to approve the issuance of a ROW grant for the project, the BLM will also amend the CDCA Plan as required in connection with its decision on the project.

County of Riverside

The County of Riverside is the Lead Agency under CEQA and a Cooperating Agency under NEPA. The County of Riverside has discretionary authority to issue a Public Use Permit for any gen-tie line alternative, as each crosses private lands subject to County jurisdiction. The County of Riverside would also require the Applicant to obtain an encroachment permit and a franchise route agreement. The County of Riverside has actively engaged in EIS planning and reviewing documentation relating to the proposed project and alternatives. Pursuant to CEQA Guidelines Section 15221, the County of Riverside intends to determine whether this EIS complies with the requirements of CEQA, and if so, to use this EIS to provide the environmental review required for its decision regarding the approval of a gen-tie action alternative under CEQA. The County of Riverside and BLM have signed a memorandum of understanding that defines their relationship and identifies the County as a Cooperating Agency. The MOU was fully executed on June 5, 2012. The MOU is included as Appendix L of this EIS.

National Park Service

The National Park Service is a Cooperating Agency under NEPA. The National Park Service has actively engaged in EIS planning and reviewing documentation relating to the proposed project and alternatives. The National Park Service has no decision-making authority over the proposed project; however, the National Park Service has an interest in ensuring that the effects of development projects on National Parks are minimized. The National Park Service and BLM have signed a memorandum of understanding that defines their relationship and identifies the National Park Service as a Cooperating Agency. On April 20, 2011, BLM met with NPS representatives in Palm Springs, CA to discuss the project and the Cooperating Agency relationship. BLM met with NPS again on September 13, 2011 to discuss incorporation of NPS comments on the administrative draft of the EIS. Comments were received from NPS staff and incorporated into the Draft EIS. The BLM again met with NPS representatives in Joshua Tree, California on June 20, 2012 to discuss the Park's preliminary response to the Draft EIS. The Park also submitted formal written comments, which are presented in Appendix M of this Final EIS (see comment letter A004). Comments from NPS staff were accepted and are incorporated into this Final EIS.

ES.3 NATIVE AMERICAN GOVERNMENT TO GOVERNMENT CONSULTATION AND SECTION 106 CONSULTATION

Native American Government to Government Consultation

The BLM is responsible for consultation with Native American tribes for the purpose of identifying sacred sites and other places of traditional religious and cultural importance that have the potential to be impacted by the Proposed Action, to develop measures which avoid, minimize or mitigation such effects, and to incorporate appropriate mitigation measures into project approvals that address the potential discovery of such sites during construction.

The BLM initiated formal, government-to-government tribal consultation at the earliest stages of project planning by letter on October 4, 2011 (Kalish 2011). The Palm Springs-South Coast Field Office of the BLM sent letters to 15 Indian tribes, including those identified by the NAHC. The letter requested assistance in identifying any issues or concerns that a tribe might have about the project, including identifying places of religious and cultural significance that might be affected by the proposed project. The letter further requested that each Tribal Government identify those tribal representatives who have been designated to consult with BLM on this project.

Since that time, the BLM has followed up with Tribal governments through additional correspondence, communication, and provision of other project information.

The fifteen tribes currently being consulted with on the DHSP are: Agua Caliente Band of Cahuilla Indians, Augustine Band of Cahuilla Mission Indians, Cabazon Band of Mission Indians, Cahuilla Band of Mission Indians, Chemehuevi Indian Tribe, Cocopah Indian Tribe, Colorado River Indian Tribes, Fort Mojave Indian Tribe, Fort Yuma Quechan Indian Tribe, Morongo Band of Mission Indians, Ramona Band of Mission Indians, San Manuel Band of Mission Indians, Soboba Band of Luiseno Indians, Torres-Martinez Desert Cahuilla Indians, and the Twentynine Palms Band of Mission Indians.

On May 9, 2012, BLM and Native American Tribes conducted a field visit to the project site. Representatives from the Augustine Band of Mission Indians and the Colorado River Indian

Tribes attended. Tribal representatives expressed the concerns about the geomorphological nature of the project site, and the possibility of subsurface archaeological materials. The archaeological report was approved by the BLM in May 2012. A letter was sent to the Tribes on June 4, 2012 informing them of the availability of the report. Agua Caliente Band of Mission Indians, Colorado River Indian Tribes, and Fort Yuma Quechan Tribe requested a copy of the report. Copies were sent on August 2, 2012, June 11, 2012, and October 22, 2012 respectively. The project was discussed with the Fort Yuma Quechan Tribe on September 26, 2012.

Additional documentation regarding that consultation is provided in Appendix I. Consultation with Indian Tribes, and discussions with Tribal organizations and individuals, has revealed concern about the importance and sensitivity of cultural resources near the DHSP project site, concern about cumulative effects to cultural resources and landscapes.

As the environmental review and Section 106 consultation processes proceed for the DHSP, the BLM will continue to consult with Indian tribes regarding issues or concerns with the project, and on properties to which they attach cultural or religious significance.

Section 106 Consultation and Memorandum of Agreement

The Native American Heritage Commission (NAHC) maintains two databases to assist cultural resources specialists in identifying cultural resources of concern to California Native Americans, referred to here as ethnographic resources. The NAHC Sacred Lands database has records for places and objects that Native Americans consider sacred or otherwise important, such as cemeteries and gathering places for traditional foods and materials. The NAHC Contacts database has the names and contact information for individuals, representing a group or themselves, who have expressed an interest in being contacted about development projects in specified areas. The applicant requests information from the NAHC on the presence of sacred lands in the vicinity of a proposed project and also request a list of Native Americans to whom inquiries would be made to identify both additional cultural resources and any concerns the Native Americans may have about a proposed project.

Chambers Group contacted the Native American Heritage Commission (NAHC) in October of 2011 to obtain information on known cultural resources and traditional cultural properties and to learn of any concerns Native Americans may have about the DHSP. The NAHC responded on October 5, 2011 with the information that the Sacred Lands File (SLF) database failed to indicate the presence of Native American cultural resources within the DHSP Area of Potential Effects. The NAHC also forwarded a list of Native American groups or individuals with traditional ties to the project area. This list can be found in Appendix I.

On October 10, 2012, BLM held a meeting of the consulting parties for the Section 106 process for the DHSP. Representatives from the Agua Caliente Band of Cahuilla Indians, Augustine Band of Cahuilla Indians, Cabazon Band of Mission Indians, Colorado River Indian Tribes, Fort Mojave Indian Tribe, San Manuel Band of Mission Indians, Soboba Band of Luiseno Indians, and Twenty-nine Palms Band of Mission Indians attended the meeting. The other consulting parties in attendance at the October 10 meeting included the Applicant and the County of Riverside.

A Memorandum of Agreement (MOA) is being developed for this project as a part of the Section 106 process. The MOA would be among the BLM, SHPO, EDF Renewables, and interested

Indian tribes. The Advisory Council on Historic Preservation would be invited to participate. The MOA will include a list of historic properties located within the APE, require that a Historic Property Treatment Plan be developed and implemented prior to the issuance of a Notice to Proceed, provide for review by interested parties of draft documents resulting from implementation of the Historic Property Treatment Plan, provide for the management of unanticipated discoveries of cultural resources, address treatment of Native American human remains, and include reporting requirements. In addition, the MOA provides a phased approach to the identification and evaluation where access to private land to conduct archaeological surveys has not been granted. NRHP eligibility evaluations and treatment of historic properties would be carried out before Project construction. Once the MOA is signed, which will be before the ROD for this EIS is signed, compliance with Section 106 of the NHPA will be considered complete (Kalish 2012). A draft MOA is included as Appendix O.

ES.4 PUBLIC PARTICIPATION

On October 3 and 6, 2011, prior to publication of the Draft EIS, scoping activities were conducted by the BLM in compliance with the requirements of NEPA for the DHSP. Additional public information hearings were held on May 14, 2012 to solicit feedback on the Draft EIS. The BLM's scoping activities are described in detail in the Public Scoping Report, which is provided in Appendix B here. The scoping report documents the Notice of Intent, the scoping meetings, workshops, and the comments received during scoping.

ES.5 PURPOSE AND NEED

In accordance with FLPMA (Section 103(c)), public lands are to be managed for multiple uses, and management must consider the long-term needs of future generations for renewable and non-renewable resources. The Secretary of the Interior is authorized to grant ROWs on public lands for systems of generation, transmission, and distribution of energy (Section 501(a)(4)). Given the BLM's multiple use mandate, the purpose and need for the Proposed Action is to respond to a FLPMA ROW application submitted by the Applicant to construct, operate, maintain, and decommission a solar energy-generating facility and associated infrastructure on BLM lands in compliance with FLPMA, BLM ROW regulations, and other applicable Federal laws and policies, including:

- Executive Order 13212, dated May 18, 2001. Mandates that agencies act expediently and in a manner consistent with applicable laws to increase the "production and transmission of energy in a safe and environmentally sound manner."
- The Energy Policy Act 2005 (EPAct 05). Sets forth the "sense of Congress" that the Secretary of the Interior should seek to have approved non-hydropower renewable energy projects on the public lands with a generation capacity of at least 10,000 MW by 2015.
- Secretarial Order 3285A1, dated March 11, 2009, amended February 22, 2010. "Establishes the development of renewable energy as a priority for the Department of the Interior."

In connection with its decision on the DHSP, the BLM's action will also include consideration of potential amendments to the CDCA Plan. The CDCA Plan, while recognizing the potential compatibility of energy facilities on public lands, requires that all sites associated with power generation or transmission not identified in the Plan be considered through the land use plan amendment process. This document provides information to the authorized officer to decide: (i)

whether the application area should remain undesignated or be designated as suitable or unsuitable for solar energy development under the CDCA Plan, and (ii) whether a high-voltage transmission line should be allowed outside of a federally designated utility corridor. If the BLM decides to approve the issuance of a ROW grant for the project and associated gen-tie line, the BLM will also amend the CDCA Plan as required.

ES.6 DECISIONS TO BE MADE

As defined by the purpose and need, the BLM is responding to the Applicant's application for a ROW grant to construct, operate, maintain, and decommission the DHSP on public lands. In doing so, the BLM will adopt one of the alternatives described below. Alternatives considered in this Final EIS are based on issues identified by the BLM and on comments received during the public scoping process. The BLM is required to consider a range of alternatives that are considered "reasonable," usually defined as alternatives that are realistic (not speculative), technologically and economically feasible, and responsive to the purpose and need of the project. The EIS also needs to consider a "no action" or "no project" alternative.

This document provides information to the Authorized Officer to make decisions on the following questions:

- Should the application area remain undesignated or be designated as suitable or unsuitable for solar energy development?
- Should the project's high-voltage gen-tie transmission line be allowed outside of a federally designated utility corridor?

If the BLM designates the project site as suitable for solar energy development and decides to allow the high-voltage gen-tie transmission line outside of a federally designated utility corridor, it would also make a decision on the following question:

- Should the proposed ROW grant be issued as applied for, issued for a modified project, or denied?

If the BLM decides to approve the issuance of a ROW grant, the BLM will also amend the CDCA Plan as required.

Similarly, the County of Riverside must respond to the applications submitted by the Applicant. In rendering a decision whether to approve the project and issue the necessary permits to construct and operate the DHSP, the County must determine whether the project is consistent with the policies of the Riverside County General Plan and conforms to applicable regulations and standards set forth in County ordinances. The County must also make findings pursuant to CEQA that the project's impacts on the physical environment have been mitigated to the degree feasible.

Alternatives

Alternatives were evaluated for inclusion in the EIS using appropriate screening criteria pursuant to NEPA and CEQA. The alternatives that respond to the purpose and need for the Proposed Action (see Section ES.2) and are otherwise reasonable (as described in Section 6.6.1 (Reasonable Alternatives) of the BLM NEPA Handbook (H-1790-1)) are fully analyzed in the EIS. As part of the alternatives screening process, 20 alternatives were evaluated, and 12 alternatives,

including the proposed DHSP, were developed in this EIS, as follows (see Chapter 2 for complete descriptions of these alternatives):

- Alternative 1: No Action (No Plan Amendment)
- Alternative 2: No Project Alternative (with Plan Amendment to Find the Site Suitable for Solar Energy Development)
- Alternative 3: No Project Alternative (with Plan Amendment to Find the Site Unsuitable for Solar Energy Development)
- Alternative 4: Proposed Solar Project
- Alternative 5: Solar Project Excluding WHMA
- Alternative 6: Reduced Footprint Solar Project
- Alternative 7: High-Profile Reduced Footprint Solar Project
- Alternative A: No Gen-Tie
- Alternative B: Proposed Gen-Tie Line (Shared Towers)
- Alternative C: Separate Transmission Towers within Same ROW
- Alternative D: Cross-Valley Alignment of Gen-Tie Line
- Alternative E: New Cross-Valley Alignment

Comparison of Alternatives

In order to have a complete project, the Authorized Officer may choose one power plant alternative (Alternatives 1-7) and one gen-tie line alternative (Alternatives A-E). A comparison of alternatives is presented in Section 2.17 of this EIS.

Agency Preferred Alternative

The BLM has selected Alternative 7, High-Profile Reduced Footprint Solar Project, with Alternative B, Proposed Gen-Tie Line (Shared Towers), as the agency-preferred alternative. Alternative 7 with Alternative B is the preferred alternative because it would be able to generate 125 to 135 MW of renewable energy on fewer acres than the Proposed Action, thus reducing impacts resulting from ground disturbance. This alternative would also incorporate the use of shared facilities in an already designated transmission line ROW, minimizing cumulative impacts.

CEQA Environmentally Superior Alternative

CEQA defines the environmentally superior alternative as having an overall environmental advantage compared to the other alternatives based on the impact analysis. As demonstrated in Section 2.17.3, the overall environmentally superior alternative is Alternative 1, No Action Alternative, with Alternative A, No Gen-Tie Alternative. The environmentally superior alternative among the remaining action alternatives is Alternative 6, Reduced Footprint Alternative, with Alternative B, Proposed Gen-Tie Line (Shared Towers). Alternative 6 and Alternative 7 are substantially the same, but Alternative 6 uses shorter panel heights. A complete analysis of how this conclusion was reached is presented in Section 2.17.

ES.7 CONNECTED/CUMULATIVE ACTIONS

Connected actions are defined by the BLM Handbook H-1790-1 as those actions that are "closely related" and "should be discussed" in the same NEPA document (40 CFR 1508.25(a)(1)). There are no connected actions for this EIS.

Cumulative actions are defined by the BLM NEPA Handbook H-1790-1 as proposed actions which potentially have a cumulatively significant impact together with other proposed actions and "should be discussed" in the same NEPA document (40 CFR 1508.25(a)(2)). For this NEPA analysis, existing conditions are the physical environment as of September 2011 (the commencement of environmental analysis), which includes the Desert Sunlight Solar Farm's solar field under construction but not fully constructed and that project's gen-tie line approved but not yet constructed. The completed Desert Sunlight Solar Farm and gen-tie are foreseeable actions for the purposes of this analysis and are addressed as cumulative actions. Similarly, there are a large number of renewable energy and other projects proposed in the region that were identified as potentially contributing to cumulative environmental impacts. These cumulative projects are identified and discussed in detail in Section 4.1 of this EIS.

ES.8 ENVIRONMENTAL CONSEQUENCES

Unavoidable Adverse Effects

- **Air Quality.** Air pollutant emissions during construction would likely result in temporary and unavoidable adverse PM10, VOC, CO, and NOx impacts.
- **Vegetation Resources.** Temporary disturbance and permanent loss of vegetation and habitat, jurisdictional streambeds, sensitive communities, and special status plant species would occur on site due to the construction of the project. Dust and erosion related to construction would impact off-site plant species.
- **Wildlife Resources.** Temporary disturbance and permanent loss of wildlife habitat on site, displacement of wildlife off site, regional habitat fragmentation, and disturbances by dust, light, and noise of off-site habitat would result from project construction and operation. Operation and maintenance would further impact birds on site. The project would contribute to loss of special status species in the NECO planning area.
- **Cultural Resources.** Direct and indirect impacts including adverse change to significance of historic properties.
- **Lands and Realty.** The project would contribute to large scale of land use conversion (over 52,000 acres or 2.5 percent of the land along the I-10 corridor).
- **Noise.** The project would result in a substantial increase in traffic noise levels during construction and decommissioning along Kaiser Road north of Lake Tamarisk Road.
- **Recreation.** The project would be visible from wilderness areas in the Coxcomb Mountains during construction, operation, and decommissioning.
- **Visual Resources.** The project would create impacts from the conversion of a natural desert landscape to a landscape dominated by industrial character. Long-term land scarring would follow project decommissioning. The project would have strong visual contrast with the surrounding landscape and would be visible from proximate wilderness areas and scenic vistas.

The project, if approved, would conflict with several Riverside County General Plan policies designed to protect visual resources.

CEQA Significant Impacts and Mitigation Measures

In compliance with Section 15123(b)(1) of the CEQA Guidelines, this section summarizes the proposed project's significant impacts and mitigation measures.

Table ES-1. CEQA Significant Impacts and Mitigation

Impact Area	Significance Criterion	Significant Unavoidable Impact	Description
Air Resources	AR-2 and AR-3	Construction emissions	Construction of the project would generate emissions of particulate matter (PM2.5 and PM10), VOC, CO, and NOx. Mitigation Measures AIR-1 through AIR-4 would limit these emissions to the extent possible, but residual impacts from PM10, PM2.5, VOC, CO, and NOx would persist after mitigation. Significant, unavoidable impacts would be temporary; these impacts would be limited to the duration of construction activities.
Biology – Vegetation	VEG-1	Cumulative impacts to sensitive natural communities	Even with implementation of Mitigation Measures VEG-1 through VEG-10, the project would represent a considerable contribution to the cumulatively significant regional impacts to sensitive natural communities.
Biology – Vegetation	VEG-2	Cumulative impacts to jurisdictional streambeds	Even with implementation of Mitigation Measures VEG-1 through VEG-10, the project would represent a considerable contribution to the cumulatively significant regional impacts to state-jurisdictional streambeds.
Biology – Wildlife	WIL-1	Cumulative impacts to special-status species	Even with implementation of mitigation, the residual impacts of the project would represent a considerable contribution to cumulatively significant habitat loss for special-status wildlife species in the NECO planning area.
Biology – Wildlife	WIL-2	Cumulative impacts to wildlife movement	Even with implementation of mitigation, the residual impacts of the project would contribute to a cumulatively considerable reduction of wildlife movement and connectivity in the upper Chuckwalla Valley.
Cultural Resources	CR-1 and CR-2	Adverse change to historic and archaeological resources	The project would result in direct and indirect impacts during construction, operation, and decommissioning to cultural resources, including adverse change to the significance of historic and archaeological resources. Mitigation Measures MM CUL-1 through MM CUL-11 would reduce impacts by developing and implementing a Memorandum of Agreement and Historic Properties Treatment Plan, requiring monitoring and training for all construction personnel, treating/curating inadvertent discoveries, avoiding known resources, and implementing a radio informational program. However, impacts of the gen-tie line to the setting of the North Chuckwalla Petroglyph District (CA-RIV-1383, NRHP-listed), and the Coco-Maricopa trail segments (CA-RIV-0053T, determined eligible) are significant and unavoidable under CEQA.
Noise and Vibration	NZ-4	Increase in noise levels along Kaiser Road	The project would result in a substantial increase in traffic noise levels during construction and decommissioning along Kaiser Road north of Lake Tamarisk Road. Mitigation Measure NOI-1would limit construction activities to daylight hours; however, there would still be a significant unavoidable impact from project construction.
Visual Resources	V-1	Scenic vistas	Project would be prominently visible from elevated vantage points in the area, and the introduction of industrial character and structural visual contrast would result in significant unavoidable impacts to these scenic vistas.

Table ES-1. CEQA Significant Impacts and Mitigation

Impact Area	Significance Criterion	Significant Unavoidable Impact	Description
Visual Resources	V-3	Degrade visual character of the landscape	Project would introduce a prominent built facility with considerable industrial character into an existing landscape presently absent such features, causing a substantial degradation of the existing visual character or quality of the site and its surrounding landscape when viewed from the elevated viewpoints in the wilderness areas.
Visual Resources	V-6	Inconsistency with local policies	The moderate to high degree of visual change that would be caused by the proposed solar farm would not be consistent with the following Riverside County General Plan policies: LU 4.1, LU 13.1, LU 13.3, LU 13.5, LU 13.8, LU 20.1, LU 20.2, LU 20.4, DCAP 2.3, DCAP 9.1, and DCAP 10.1.
Visual Resources	V-7	Cumulative visual alteration	The presence of the project would substantially contribute to cumulative visual alteration. There are no mitigation measures available to reduce this impact.

Areas of Controversy

Pursuant to 40 CFR 1502.12 and Section 15123(b)(2) of the CEQA Guidelines, this section summarizes the areas of known controversy surrounding the proposed project. Based on input received from agencies, organizations, Native Americans and Tribal Governments, and members of the general public during scoping EIS, several areas of controversy related to the DHSP emerged, including:

- Opposition to the placement of a large solar project on largely undisturbed desert land
- Concern for conflict with designated recreational and wilderness uses in the project area, including in Joshua Tree National Park
- Concern regarding the impacts of the project on biological and cultural resources
- Concern regarding groundwater use
- Concern regarding the range of alternatives considered
- Concern regarding the purpose of and need for the project

Extensive comments were received during the scoping process for the DHSP. The scoping process and public input received are provided in detail in Appendix B, Pubic Scoping Report. Additional public comments were received during the Draft EIS public review period. Public comments are reproduced in full in Appendix M, and responses to all comments are provided in Appendix N.

Issues to be Resolved

Pursuant to 40 CFR 1502.12 and Section 15123(b)(3) of the CEQA Guidelines, this section summarizes the major issues to be resolved in the Final EIS and the Record of Decision.

The choice among alternatives is a major issue to be resolved. BLM has the ultimate authority to approve or deny any of the solar facility and gen-tie alternatives; however, the County of Riverside has the authority to select a gen-tie alternative, and the County must adopt a Statement of Overriding Considerations pursuant to CEQA Section 15093 for any alternative that is

approved that would have significant unavoidable impacts. The two Lead Agencies must approve the same gen-tie alternative in order for the Applicant to construct any portion of the project.

Access to private land was an obstacle to performing cultural and paleontological surveys on all gen-tie alternatives. In addition, at the time of publication of the Draft EIS, field assessments were ongoing. The results of those additional surveys have been incorporated into this Final EIS and 96 percent of the cultural resources area of potential effect has been surveyed; however, it should be noted that certain private parcels remained inaccessible and have not been fully surveyed for this Final EIS, which is an allowable reason to forego completion of surveys under both NEPA and CEQA. The public is being provided an opportunity to review and comment on the additional survey information under the 30 day public review period afforded under NEPA.

Finally, the Lead Agencies must decide whether to adopt a mitigation measure for groundwater resources that would protect the Chuckwalla Valley Groundwater Basin from overdraft conditions attributed to the DHSP. Such a measure would also contribute to unavoidable adverse air quality effects and adverse effects on noise and traffic.

CHAPTER 1 – INTRODUCTION AND PURPOSE AND NEED

EDF Renewable Energy (EDF or Applicant),[1] a wholly owned affiliate of EDF Energies Nouvelles (formerly SIIF Energies), which is a 50 percent-owned subsidiary of the EDF Group, proposes to construct and operate a 150-megawatt (MW), nominal capacity, alternating current (AC), solar photovoltaic (PV), energy-generating project known as the Desert Harvest Solar Project (DHSP or proposed project). The DHSP consists of a main generation area, operations and maintenance (O&M) facility, on-site substation, switchyard, site security, and a 220-kilovolt (kV) generation interconnection line (gen-tie line). The proposed project would be located on lands administered by the U.S. Department of the Interior, Bureau of Land Management (BLM), Palm Springs–South Coast Field Office, and portions of the project would be located on land owned by Metropolitan Water District of Southern California (MWD), the County of Riverside, California (County), and private landowners.

Because the proposed project would be located primarily on lands administered by the BLM, the Applicant filed a right-of-way (ROW) application with the BLM to construct, operate, and decommission the proposed project (Case File Number CACA #49491). The decision regarding the issuance of the ROW grant will be based in part on an evaluation of the proposed Project's potential environmental effects and measures that mitigate those effects through the environmental review process under the National Environmental Policy Act of 1969 (NEPA) and the requirements of the Federal Land Policy and Management Act of 1976 (FLPMA). As part of the ROW grant application process, the Applicant submitted a Plan of Development (POD) for the project to the BLM on December 22, 2009, followed by several revisions of the POD to supplement information provided in the original submittal in November 2010 and April 2011.

In compliance with NEPA, the BLM prepared this Final Environmental Impact Statement (EIS) to inform the public about the Proposed Action and to meet the needs of federal, state, and local permitting agencies evaluation the project. The BLM authorization of a ROW grant for the project, either as proposed or modified, would require an amendment to the California Desert Conservation Area (CDCA) Plan (BLM 1980), as amended (CDCA Plan); therefore, in connection with its evaluation of the project, this documents also presents the BLM Proposed Plan Amendments (PA) to the CDCA Plan.

The Joshua Tree National Park is north, east, and west of the proposed project; at its closest point the DHSP site is about 1.75 miles southwest of the national park. The National Park Service (NPS) is a cooperating agency for preparation of this EIS. This means that, although the NPS does not have the jurisdiction to issue any permits for the proposed project or alternatives, the BLM has requested that the NPS provide its technical expertise in the evaluation of impacts in this EIS.

The following terminology is used throughout this document.

- **"Proposed Action"** refers to the proposed project inclusive of the necessary CDCA Plan amendments to allow construction of the proposed project;
- **"proposed project"** refers to the proposed solar facility and the proposed gen-tie line;

[1] In the Draft EIS, enXco Development Corporation (enXco) was identified as the Applicant. Since the publication of the Draft EIS, enXco has changed its name to EDF Renewable Energy (EDF).

- **"DHSP"** refers to any combination of solar facility action alternative and gen-tie line action alternative that could be selected by the BLM for issuance of a ROW grant and the necessary CDCA Plan amendments;
- **"solar facility"** refers to any of the solar facility action alternatives that could be selected by the BLM for issuance of a ROW grant and the necessary CDCA Plan amendment; and
- **"gen-tie line"** refers to any of the gen-tie line action alternatives that could be selected by the BLM for issuance of a ROW grant and the necessary CDCA Plan amendment, as applicable.

The Applicant is coordinating with other federal agencies, including the U.S. Fish and Wildlife Service (USFWS) and the U.S. Army Corps of Engineers (USACE), regarding potential Project approvals and any associated NEPA compliance requirements. The Applicant is also coordinating with California state and local agencies, including the California Department of Fish and Game (CDFG), California Department of Transportation (Caltrans), Metropolitan Water District of Southern California (MWD), California Regional Water Quality Control Board (RWQCB), South Coast Air Quality Management District (SCAQMD), and the County, regarding potential project approvals and any associated California Environmental Quality Act (CEQA) compliance requirements. In compliance with Section 15221 of the CEQA Guidelines, this document has been prepared to a CEQA-equivalent standard, as the County and CDFG may use this document to meet their CEQA obligations related to any permits or approval they might issue for the project. Further detail on this process is provided in Section 1.5.2.

This EIS describes and evaluates the environmental effects that are expected to result from construction, operation, maintenance, and decommissioning of the proposed project and alternatives, and imposes mitigation measures that would avoid, minimize, or mitigate the environmental impacts identified. In accordance with NEPA and CEQA requirements, this EIS also identifies and evaluates alternatives that respond to the stated purpose and need for the proposed project (including one No Action Alternative and two No Project with Plan Amendment alternatives) that could avoid or minimize significant environmental impacts associated with the project as proposed by the Applicant, and evaluates the environmental impacts associated with these alternatives. The information contained in this EIS will be considered by the BLM in its deliberations regarding approval of the ROW grant and may also be considered by the other permitting agencies, including the County, and other federal, state, and local agencies.

1.1 PROJECT OVERVIEW

The Proposed Action consists of two main components associated with generating and delivering electricity — a solar facility and a 220-kV gen-tie line — and an associated planning decision to determine whether the proposed project application area is suitable for solar development and to allow a high-voltage transmission line outside of a federally designated utility corridor — a plan amendment as described in Section 1.2 and in detail in Chapter 2.

The solar facility site, where the power would be generated, would encompass up to 1,208 acres of BLM-managed public lands located immediately adjacent to the site of First Solar's approved Desert Sunlight Solar Farm project, for which a Final EIS was issued in April of 2011 and a Record of Decision (ROD) issued in August of 2011.

The proposed solar facility would consist of several components:

- Main Generation Area – PV arrays, switchyard, inverters, overhead lines, and access corridors;

- Operations and Maintenance (O&M) Facility;
- On-Site Substation and Switchgear; and
- Site Security, Fencing, and Lighting.

The proposed gen-tie line would transmit the electricity generated at the proposed solar facility to the regional transmission system, through the Red Bluff Substation where the power from the proposed solar facility would feed into the SCE's existing Devers Palo Verde No. 1 (DPV1) 500-kV interconnection line. The proposed gen-tie line would be 12 miles long, encompassing 256 acres of ROW. The Applicant proposes to share steel monopoles included as part of the approved but not yet constructed Desert Sunlight Solar Farm project gen-tie line. Poles are expected to be 135 feet high and approximately 900 to 1,100 feet apart.

For the solar facility and gen-tie line, the following alternative configurations are considered in this EIS:

- Four solar project configurations – Proposed Solar Project, Solar Project Excluding the Palen-Ford Wildlife Habitat Management Area (WHMA), Reduced Footprint Solar Project, and High-Profile Reduced Footprint Solar Project;
- Four gen-tie line configurations – Proposed Gen-Tie Line (Shared Towers), Separate Transmission Towers within Same ROW, Cross-Valley Alignment, and New Cross-Valley Alignment;
- A No Action alternative; and
- Two No Project (with CDCA Plan Amendment) alternatives.

The details of the proposed project and these alternatives are described in Chapter 2.The selection of the proposed project site was based on a number of criteria, including:

- Solar insolation – The project area ranks among those with the highest insolation values in North America, with corresponding favorable projections of net capacity factor. According to preliminary figures, the global horizontal radiance for this location is 216 watts per square meter per day ($W/m^2/day$).
- Road and transmission access – The proposed solar facility parcel is located within an area that is readily accessible via roads and transmission ROWs.
- Distance to point of interconnect – The approved SCE Red Bluff substation is located approximately 6 miles to the south/southeast of the project boundary, and the total length of the gen-tie line would be up to 12 miles.
- Size – The solar panels and inverters would cover between 6 and 7 acres/MW.
- Environmental Considerations – Site screening took into consideration potential impacts on:
  - Surface water and groundwater;
  - Plants, including endangered, threatened, and sensitive species;
  - Terrestrial wildlife and bird populations, including endangered, threatened, and sensitive species;
  - Soils and agricultural potential;
  - Cultural heritage resources;
  - Noise;
  - Social and economic indicators; and
  - Visual resources.

BLM's pre-application process required the Applicant to perform biological resources surveys, cultural resources outreach, and other environmental due diligence prior to the BLM's accepting the ROW application as complete and ready for processing under NEPA.

1.2 BLM PURPOSE AND NEED

In accordance with FLPMA (Section 103(c)), public lands are to be managed for multiple uses and in consideration of the long-term needs of future generations for renewable and non-renewable resources. The Secretary of the Interior is authorized to grant ROWs on public lands for systems of generation, transmission, and distribution of electric energy (Section 501(a)(4)). Taking into account the BLM's multiple use mandate, the purpose and need for the Proposed Action is to respond to a FLPMA ROW application submitted by the Applicant to construct, operate, maintain, and decommission a solar energy–generating facility and associated infrastructure on public lands administered by the BLM in compliance with FLPMA, BLM ROW regulations, and other applicable federal laws and policies.

This Proposed Action would, if approved, assist the BLM in addressing the management objectives in:

- The Energy Policy Act 2005 (EPAct), Title II, Section 211, which sets forth the "sense of Congress" that the Secretary of the Interior should seek to have approved non-hydropower renewable energy projects on the public lands with a generation capacity of at least 10,000 MW by 2015
- Executive Order 13212, dated May 18, 2001, which mandates that agencies act expediently and in a manner consistent with applicable laws to increase the production and transmission of energy in a safe and environmentally sound manner.
- Secretarial Order 3285A1, dated February 22, 2010, and amended on February 22, 2010, which establishes the development of renewable energy as a priority for the Department of the Interior.

The BLM will decide whether to grant the ROW, deny the proposed ROW, or grant the ROW with modifications. The BLM may include any terms, conditions, and stipulations it determines to be in the public interest, and may include modifying the proposed use or changing the route or location of the proposed facilities (43 CFR 2805.10(a)(1)).

In connection with its decision on the DHSP, the BLM's action will also include consideration of potential amendments to the CDCA Plan, as analyzed in the Final EIS alternatives. The CDCA Plan, while recognizing the potential compatibility of solar energy facilities on public lands, requires that all sites associated with power generation or transmission not identified in that Plan be considered through the land use plan amendment process. BLM policy also encourages the avoidance of development on lands with high conflict or sensitive resource values (IM 2011-061). While the BLM is not required to formally determine whether certain high conflict lands are or are not available for solar development, if BLM decides to make that decision, it must also amend the CDCA plan. Therefore in connection with the ROW application for the proposed project, the BLM is deciding whether to amend the CDCA Plan to identify the project site as available for solar energy development or whether to amend the CDCA Plan to make the area unavailable for solar development.

Similarly, the CDCA Plan requires that transmission lines above 161 kV be placed within a federally designated utility corridor or that the transmission line be specifically allowed outside a corridor. There is no available designated corridor from the DHSP site to the Red Bluff Substation. For gen-tie action alternatives to be consistent with the CDCA Plan, the Plan requires an amendment to either allow the proposed transmission gen-tie lines outside designated utility corridors or to create a corridor. BLM is not considering creating a new corridor as a component of this project.

1.3 APPLICANT'S OBJECTIVES

The Applicant's specific objectives for the project are:

- To provide 150 MW of installed electrical capacity;
- To develop an economically feasible solar PV energy project through commercially available financing;
- To maximize operational efficiency and provide low-cost renewable energy by locating the project on contiguous lands with high solar insolation values;
- To increase local short-term and long-term employment opportunities;
- To boost local business activity during construction and operation and provide economic benefits for local businesses in Desert Center;
- To minimize environmental impacts and land disturbance by:
  - Locating the project near existing roads and transmission infrastructure;
  - Seeking to co-locate the project's gen-tie line on the transmission poles of other projects in the area as an alternative to the project's proposed stand-alone gen-tie line; and
  - Avoiding Desert Wildlife Management Areas and Areas of Critical Environmental Concern.
- To assist California in meeting its 33-percent-by-2020 renewable portfolio standard (RPS);
- To assist California in meeting its AB 32 GHG emissions reduction requirements;
- To assist the BLM in addressing the management objectives in the Energy Policy Act of 2005; and
- To further the purpose of Secretarial Order 3285A1, which establishes the development of environmentally responsible renewable energy as a priority for the Department of the Interior.

CEQA Project Objectives

The Applicant's CEQA project objectives are as follows:

- To provide a reliable renewable source of power to California's IOUs and their customers by constructing and operating a cost competitive 150-MW solar facility that generates clean energy sufficient to power approximately 42,000 Californian households;
- To assist California in meeting its AB 32 GHG emissions reduction requirements and its RPS, which establishes a renewable energy target of 33 percent of total electricity sold to retail customers by 2020; and
- To minimize environmental impacts and land disturbance by:

- Locating the project near existing roads and transmission infrastructure;
- Seeking to co-locate the project's gen-tie line on the gen-tie line poles of other projects in the area as an alternative to the project's proposed stand-alone gen-tie line; and
- Avoiding Desert Wildlife Management Areas and Areas of Critical Environmental Concern.

1.4 GENERAL LOCATION AND MAP

The proposed project area is largely vacant, undeveloped, and fairly flat land located in the Chuckwalla Valley of the Sonora Desert in eastern Riverside County (Figure 1-1, all figures are provided in Appendix A). The area proposed for the solar facility (Figure 1-2) is approximately 6 miles north of Interstate 10 (I-10) and the rural community of Desert Center and 3 miles north of Lake Tamarisk, between the cities of Coachella (to the west) and Blythe (to the east). The general area surrounding the proposed project contains existing transmission lines, telephone lines, and pipelines, as well as dirt roads. Joshua Tree National Park is located north, east, and west of the proposed project; at its closest point, the proposed solar facility site is approximately 1.75 miles southwest of the national park boundary. The Eagle Mountain Mine is approximately 4 miles northwest of the project study area. As of the commencement of this environmental analysis in September 2011, construction of the approved Desert Sunlight Solar Farm project was underway to the north of the DHSP site, but that project is not yet completed, nor has a gen-tie line been erected for that project.

1.5 ISSUES

The issues evaluated in this EIS include the physical, biological, cultural, socioeconomic, and other resources that have the potential to be affected by activities related to the Proposed Action and alternatives. Issues may be raised by the public, other agencies, or the BLM. The issues are:

- Air Resources
- Biological Resources – Vegetation
- Biological Resources – Wildlife
- Climate Change
- Cultural Resources
- Paleontology
- Fire and Fuels Management
- Soils and Geology
- Energy and Mineral Resources
- Lands and Realty
- Noise and Vibration
- Public Health and Safety
- Recreation
- Social and Economic Setting
- Environmental Justice
- Special Designations
- Transportation and Public Access
- Visual Resources
- Water Resources;
- Solid and Hazardous Wastes
- CDCA Plan Conformance

The analysis of the environmental consequences of the solar facility and gen-tie line alternatives compares the conditions of project construction, operation, and decommissioning to the existing physical conditions in the environment at the time of the commencement of analysis, or September 2011. Therefore, the baseline is the existing physical environment as it was in September, 2011 including the Desert Sunlight Solar Farm project's solar field partially under construction and the Desert Sunlight Solar Farm project's approved gen-tie line not yet constructed. The evaluation of cumulative effects considers the combined potential effects of the DHSP and other reasonably foreseeable projects.

1.6 AGENCY ROLES AND AUTHORIZATIONS

Federal, state, and local permits and approvals would be required before construction and operation of the DHSP could proceed. A list of the major permits, approvals, and consultations required is presented in the following sections. The Applicant would be responsible for obtaining all permits and approvals required to implement any authorized activities.

1.6.1 Federal Permits and Status

Table 1-1 provides a list of the federal permits, approvals, and authorizations anticipated to be required for the Proposed Action or an action alternative, and the status of relevant permit applications.

Table 1-1. Status of Project Federal Permits, Approvals, Authorizations, and Processes

Permit or Approval	Lead Agency	Agency Action or Status
FLPMA ROW Grant	BLM	The ROW grant is subject to NEPA review and terms and conditions as set forth under FLPMA and BLM's implementing regulations. If the project is approved, BLM would offer a ROW grant in the Record of Decision at the end of the NEPA process.
CDCA Plan Amendment	BLM	BLM authorization of a ROW grant for the project will require CDCA Plan amendments as described above. The amendment will be evaluated during the FLPMA and NEPA processes as provided for in BLM Planning Regulations (43 CFR Part 1600), and BLM Land Use Planning Handbook (H-1601-1).
National Historic Preservation Act (NHPA) Section 106 Compliance	BLM	Directs Federal agencies to take into account the effects of their undertakings on properties included in or eligible for inclusion in the National Register of Historic Places.
BLM Building Notice to Proceed	BLM	The BLM requirement will be specified in the Conditions of Approval pending approval of the ROW application
Federal Title V	EPA	May require Federal Operating Permit.
EPA ID No. and register as a Hazardous Waste Generator with Department of Toxic Substance Control	EPA	Takes 7-10 business days once the application form has been received. This process will be completed by the Applicant, if needed. Currently no hazardous waste is expected to be generated on-site.
Hazardous Materials Permit	Federal Motor Carrier Safety Administration	Required for transport of large amounts of hazardous materials on interstate highways. Currently no hazardous waste is expected to be generated on-site. The Applicant would likely contract this service with a licensed provider.
Federal Endangered Species Act, Incidental Take Permit	USFWS	As a result of ongoing consultation with USFWS under Section 7 of the Endangered Species Act, the Applicant may be required to comply with the requirements of a Biological Opinion and/or request an Incidental Take Permit under section 7 of the Act.

1.6.2 State Permits and Status

Table 1-2 provides a list of the state permits, approvals, or authorizations anticipated to be required for the project, as well as the status of relevant permit applications.

Table 1-2. Status of Project State Permits, Approvals, and Authorizations

Permit or Approval	Lead Agency	Agency Action or Status
2080.1 Consistency Determination or 2081 Incidental Take Permit	CDFG	If the federal USFWS biological opinion provides for an incidental take permit, CDFG concurrence will also be required under Section 2080.1 of the Fish and Game Code. The Applicant may also pursue a separate incidental take permit under 2081 of the Code for state listed species not covered by CDFG 2080.1 concurrence (Gila woodpecker).
Section 1600-1602 Streambed Alteration Agreement process under the California Fish and Game Code	CDFG	Required by CDFG in the event that the state claims jurisdictional drainages within the project site
Hauling truck and other overload permits	Caltrans	California Department of Transportation requires permits for any oversized (gross weight or dimensions) vehicle deliveries. Not expected to be required at this time.
Well Drilling Permit	California Department of Water Resources, Southern District	Permit is required for drilling water wells
Trenching and excavation permit	Cal OSHA	Submit completed permit application to any OSHA district of field office prior to commencing construction
Individual Permit	RWQCB	It is anticipated that the RWQCB will take jurisdiction of the ephemeral drainages. Pre-notification will be required to obtain an individual permit.
Waste Discharge Requirements	RWQCB	Regional water quality control board may require permits
Storm water management requirements under California Water Code and the CWA	RWQCB	Construction general permit required, including a storm water pollution prevention plan (SWPPP) that specifies best management practices (BMPs) for preventing construction pollutants from leaving the site.
Determination of Compliance	SCAQMD	An application will be submitted to the South Coast Air Quality Management District (SCAQMD) about the same time as the NEPA documents to obtain a determination of compliance (DOC).

The County of Riverside has discretionary authority to issue a Public Use Permit (PUP) for any gen-tie line alternative, as each gen-tie line alternative crosses private lands subject to County jurisdiction. Riverside County would also require the Applicant to obtain an encroachment permit and a franchise route agreement. Pursuant to CEQA Guidelines Section 15221, the County of Riverside intends to use this EIS to provide the environmental review required for its decision regarding the approval of a gen-tie action alternative under CEQA. The County of Riverside and BLM have signed an MOU that defines the relationship of the two agencies, and identifies the County of Riverside as a Cooperating Agency with the BLM. Following preparation of the EIS by the BLM, the County of Riverside will determine whether the EIS complies with the requirements of CEQA and can, therefore, be used to support its decision with respect to the gen- tie line. As described previously, the CDFG may also use the EIS to support its permitting processes.

1.7 GUIDE TO THE FINAL EIS

This document follows regulations promulgated by the Council on Environmental Quality (CEQ) for Implementing the Procedural Provisions of NEPA (40 CFR 1500-1508); the Department of the Interior's NEPA regulations, 43 C.F.R. Part 46; the BLM NEPA Handbook, H-1790-1; Sections 201, 202, and 206 of FLPMA (43 C.F.R. Part 1600); and the BLM Land Use Planning Handbook, H1601-1. This EIS describes the components of and reasonable alternatives to the Proposed Action and environmental consequences of the Proposed Action and the alternatives. In addition, the document incorporates compliance with provisions of CEQA to allow Riverside County to use this EIS to satisfy its environmental review and approval processes. CEQA Responsible Agencies and other readers interested in the CEQA compliance components of this EIS are directed to the CEQA Readers' Guide, in Section 1.8.

The EIS is organized as follows:

Chapter 1 provides general background on the proposed project; identifies the purpose and need for action; and describes the roles of the BLM, other agencies, and authorities regulating various aspects of the DHSP.

Chapter 2 describes the proposed project and land use plan amendment decisions to be made and the alternatives development and screening process conducted for the project. It also presents a range of reasonable project alternatives that address the stated purpose and need for the action, and identifies and explains why some alternatives were considered but not analyzed in detail. This chapter presents a comparison of the alternatives, and describes the BLM's agency-preferred alternative and the Environmentally Superior Alternative pursuant to CEQA requirements.

Chapter 3 describes the affected environment (existing conditions) for 21 environmental resources in the project area. The existing conditions are defined as the existing physical environment as it was in September 2011 (the date of the commencement of analysis) including the Desert Sunlight solar field partially under construction and the Desert Sunlight approved gen-tie not yet constructed.

Chapter 4 provides a comprehensive analysis and assessment of impacts (direct, indirect, and cumulative) and mitigation measures (by environmental component) for the Proposed Action and alternatives analyzed in detail (including a No Action Alternative and two No Project Alternatives). It also describes other aspects of BLM compliance with NEPA procedures, including a description of unavoidable adverse impacts, the relationship between short-term use and long-term productivity, and any irreversible or irretrievable commitments of resources (40 CFR 1502.16), as well as addressing CEQA requirements including identifying significant impacts and mitigation measures to reduce or minimize significant impacts, and a description of growth-inducing impacts. Past, present, and reasonably foreseeable potential projects contributing to cumulative impacts are also identified and cumulative impacts are analyzed in this chapter within the section addressing each resource.

Chapter 5 identifies the persons, groups, agencies and other governmental bodies that were consulted or that contributed to the preparation of the EIS; describes Native American consultations and public participation during scoping; describes the public comment process; provides a list of EIS preparers; and lists agencies, organizations, and persons to whom the EIS has been sent.

Chapter 6 provides a list of preparers, including the BLM, Cooperating Agencies, and consultants.

Chapter 7 provides the references used in preparing the EIS.

Chapter 8 includes a glossary and list of acronyms and abbreviations used in the EIS.

Chapter 9 provides an index for key words in the EIS.

Appendix A provides all the maps and figures referenced in the body of the EIS.

Appendix B provides a scoping report summarizing public comments and identifying major issues.

Appendix C contains the following reports associated with the project: Desert Tortoise Survey Reports for 2010 and 2011, Special Status Plant Survey Report, Avian Point Count Survey Report, Botanical Survey Memo, the Biological Resources Technical Report, Draft Desert Tortoise Translocation Plan, Draft Bird and Bat Conservation Strategy, Integrated Weed Management Plan, Jurisdictional Determination and delineation report, the Applicant's memo on mitigation land, the Mojave Fringe-toed Lizard Habitat Assessment, Raven Management Plan, Worker Environmental Awareness Plan, Gen-Tie Biological Resources Technical Report Supplement, Vegetation Management Plan, Closure and Reclamation Plan, USFWS Section 7 Consultation Initiation Letter, and the Gila Woodpecker Focused Survey Report.

Appendix D contains the calculations used to derive air quality and greenhouse gas estimates for the proposed project and its alternatives.

Appendix E provides a Water Supply Assessment for the proposed project and its alternatives and a Water Quality Certification letter from the Regional Water Quality Control Board – Region 7.

Appendix F contains the calculations used to derive noise estimates for the proposed project and its alternatives.

Appendix G provides field inventory sheets, visual contrast rating data sheets for key observation points, summary tables of visual effects, and two time-lapse visual simulations.

Appendix H contains a Traffic Impact Analysis used to determine traffic impacts of the proposed project and its alternatives.

Appendix I contains a contact list for tribal groups in the project area.

Appendix J contains the signed MOU between BLM and the National Park Service.

Appendix K contains the Cabazon Band Consultation Letter.

Appendix L contains the signed MOU between BLM and the County of Riverside.

Appendix M contains the full text of comments received on the Draft EIS.

Appendix N includes responses to comments on the Draft EIS.

Appendix O includes a draft Memorandum of Agreement for Section 106 compliance.

1.8 CEQA READERS' GUIDE

Public Resources Code (P.R.C.) Section 21083.7 provides that a CEQA Lead Agency "shall, whenever possible" use an EIS as an EIR. This EIS has been prepared to a CEQA-equivalent standard pursuant to P.R.C. Section 21083.7 and Section 15221 of the CEQA Guidelines. This

CEQA readers' guide summarizes information in the EIS that has been included to ensure it is a CEQA-equivalent document. Table 1-3 shows where CEQA readers may find specific CEQA-relevant information.

When a CEQA Lead Agency intends to use a federal document in place of an EIR, Section 15225 of the CEQA Guidelines requires the Lead Agency to give notice that it will use a federal document in the place of an EIR and that it believes that the federal document meets the requirements of CEQA. In addition to providing such notice, the County of Riverside intends to certify this EIS as a CEQA-equivalent document pursuant to CEQA Guidelines Section 15090 and make the findings and statement of overriding considerations required under CEQA Guidelines Sections 15091 and 15093, respectively. Mitigation measures recommended in the EIS and a mitigation monitoring program would be required to be adopted when the County certifies the EIS (P.R.C., Section 21081.6), or findings of infeasibility made. Additional detail is provided in Section 1.5.2 (State Permits and Status).

Table 1-3. Summary of CEQA Readers' Guide

CEQA-Relevant Information	Section in the Final EIS
Environmentally Superior Alternative	Chapter 2 – Section 2.15
Mitigation Measures	Chapter 4 – Summary of Impacts section under Mitigation Measures for each relevant issue area
Impact Significance Determinations	Chapter 4 – CEQA Significance Determination section under CEQA Considerations for each issue area
Cumulative Impacts (CEQA-specific)	Chapter 4 – CEQA Significance Determination section for each issue area
Growth-Inducting Effects	Chapter 4 – Subsection F-1 of Section 4.17 (Social and Economic Effects)
Energy Conservation (CEQA Appendix F)	Chapter 4 – Section 4.10.14
Public Consultation and Notice	Chapter 5 (Consultation, Coordination, and Public Participation)

Alternatives and Project Objectives

The CEQA Guidelines require consideration of the No Project Alternative (Section 15126.6(e)) and selection of a range of reasonable alternatives (Section 15126.6(c)). CEQA also requires the identification of the environmentally superior alternative (CEQA Guidelines Section 15126.6(d) and (e)(2)). Chapter 2 of the EIS describes a No Action Alternative (Section 2.2) and two No Project Alternatives (Sections 2.3 and 2.4). The environmentally superior alternative is discussed in Section 2.16, and the Applicant's CEQA objectives are listed in Section 1.3. Under CEQA, alternatives should reduce environmental impacts and are required to meet most, but not necessarily all, of the project objectives.

Mitigation Measures

CEQA requires the adoption of all feasible mitigation measures in order to reduce "significant" impacts as defined in CEQA (CEQA Guidelines Section 15092(b), 15043)). Feasible mitigation measures are included for each potentially significant impact as required by Section 15126.2(e) of the CEQA Guidelines. These measures are listed in the summaries of impacts for each relevant issue area in Chapter 4. Because the County of Riverside intends to use this EIS in issuing permits, these mitigation measures and a mitigation monitoring plan (CEQA Guidelines

Section 15097) will be adopted when the County certifies the EIS. A Mitigation Monitoring and Reporting Plan is included as Appendix J of this Final EIS.

Significance Determinations

CEQA requires specific disclosure of the "significance" of each potential impact. There is no requirement that federal agencies determine "significance" when analyzing each impact in an EIS, and the term "significant" has a different meaning in NEPA.

Each resource analysis in Chapter 4 has a section entitled "CEQA Considerations." These sections include: (1) the relevant significance criteria from the CEQA Environmental Checklist, Appendix G of the CEQA Guidelines; and (2) a CEQA significance determination (and rationale) for each significance criterion. Impact significance is assessed for construction, operation, and decommissioning of each of the relevant alternatives, including the proposed project.

Cumulative

Discussions of CEQA considerations in Chapter 4 also include an assessment of whether the alternatives would represent a considerable contribution to cumulative impacts. This analysis is included in compliance with Section 15130 of the CEQA Guidelines. As appropriate, this analysis includes feasible options for mitigating cumulative impacts in accordance with Section 15130(b)(5). Past, present, and reasonably foreseeable potential projects contributing to cumulative impacts are identified in Section 4.1.4 (Introduction and Overview, Cumulative Scenario Approach).

Other CEQA-Relevant Sections

There are several other CEQA-specific requirements that are addressed in this EIS:

- **Growth-inducing effects** are addressed in Section 4.17.14 (Social and Economic Effects, CEQA Considerations) in compliance with Section 15126.2(d) of the CEQA Guidelines.
- **Energy conservation** is addressed in Section 4.10.14 (Energy and Mineral Resources, Energy Conservation) in compliance with CEQA Appendix F.

Public Consultation and Public Notice

Public consultation and notice are addressed generally in Chapter 5. A Notice of Intent (NOI) to prepare the EIS was published in the Federal Register on September 15, 2011 and was received by the State Clearinghouse on September 29, 2011. The project was assigned State Clearinghouse #2011094004. The NOI was prepared pursuant to CEQA Guidelines Section 15082; that is, the NOI contained sufficient information to allow Responsible and Trustee agencies and the Office of Planning and Research to make a meaningful response. The NOI was circulated to the following state agencies: Department of Conservation; California Energy Commission; California Highway Patrol; Native American Heritage Commission; Department of Parks and Recreation; Public Utilities Commission; Resources Agency; State Lands Commission; Resources, Recycling and Recovery; Department of Water Resources; Caltrans, District 8; Regional Water Quality Control Board, Region 7; Department of Toxic Substances Control; Department of Fish and Game, Region 6. The U.S. Fish and Wildlife Service and other federal agencies also received the NOI.

The federal scoping period was September 15, 2011 to October 17, 2011. The review period listed by the State Clearinghouse was September 29, 2011 through October 28, 2011, and scop-

ing comments were accepted through this date. Therefore, the scoping comment period lasted more than 30 days, which is the duration required for review of a notice of preparation of an EIR under CEQA Guidelines Section 15082. Notification for public Scoping Meetings was posted on the BLM's website. In addition, notices were sent to Responsible and Trustee Agencies under CEQA, all landowners within 300 feet of the project boundary, and other interested parties. Two public scoping meetings were held on October 3, 2011 and one was held on October 6, 2011.

A notice of the availability of the Draft EIS was published in compliance with the requirements of CEQA Guidelines Sections 15225 and 15087, including publishing in a newspaper of general circulation in the area potentially affected by the project. In addition, the Draft EIS has been filed with the Riverside County Clerk and the State Clearinghouse, and the notice will be posted in the office of the County Clerk for 30 days. The Draft EIS was made available for public review for 90 days, as provided under P.R.C. Section 21091, and public notice of that fact has been given pursuant to Section 21092.

As the CEQA Lead Agency, it is anticipated that the County will certify the Final EIS as being in compliance with CEQA pursuant to CEQA Guidelines Section 15090. Prior to reaching a decision approving the proposed project or an alternative, the County will be required to make findings pursuant to CEQA Guidelines Section 15091 and adopt a statement of overriding considerations pursuant to CEQA Guidelines Section 15093. Within 5 working days of deciding to approve the proposed project or an alternative, should this be the course of action the County chooses, the County will be required to file a notice of determination pursuant to CEQA Guidelines Section 15094.

1.9 POLICY CONSISTENCY AND LAND PLAN CONFORMANCE

1.9.1 Relationship of the Proposed Action to BLM Policies, Plans, and Programs

This section summarizes the BLM policies, plans, and programs that apply to the Proposed Action and alternatives.

Federal Land Policy and Management Act of 1976. FLPMA provides the BLM's overarching mandate to manage the lands and resources under its stewardship based on the principles of multiple use and sustained yield. Multiple use is a concept that directs management of lands and resource values in a way that best meets the present and future needs of Americans. It is defined as "a combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and nonrenewable resources" (FLPMA §103[c]). In processing a land use plan amendment, BLM must also comply with the BLM Planning Regulations (43 CFR Part 1600) and the BLM Land Use Planning Handbook (H-1601-1). Project compliance with the multiple use class requirements is discussed in Chapter 4.13, Lands and Realty.

California Desert Conservation Area (CDCA) Plan 1980, as amended (CDCA Plan). The CDCA encompasses 25 million acres in southern California designated by Congress in 1976 through FLPMA. The BLM manages about 10 million of those acres. Congress directed the BLM to prepare and implement a comprehensive long-range plan for the management, use, development, and protection of public lands within the CDCA. The CDCA Plan, as amended, is based on the concepts of multiple use, sustained yield, and maintenance of environmental quality.

The CDCA Plan provides overall regional guidance for BLM-administered lands in the CDCA and establishes long-term goals for protection and use of the California desert.

The CDCA Plan establishes four multiple use classes, multiple use class guidelines, and plan elements for specific resources or activities, such as motorized vehicle access, recreation, and vegetation. Project compliance with the multiple use classes is discussed in Section 4.13, Lands and Realty. The multiple use classes are:

- **Class C (Controlled Use) –** About 2 million acres are Class C. These include 69 wilderness areas (3,667,020 acres) created by Congress with the October 1994 passage of the California Desert Protection Act. These lands are to be preserved in a natural state; access generally is limited to non-motorized, non-mechanized means—on foot or horseback.
- **Class L (Limited Use)** – About 2 million acres are Class L. These lands are managed to protect sensitive, natural, scenic, ecological, and cultural resource values. They provide for generally lower-intensity, carefully controlled multiple uses that do not significantly diminish resource values.
- **Class M (Moderate Use)** – About 1.5 million acres are Class M. These lands are managed in a controlled balance between higher-intensity use and protection. A wide variety of uses such as mining, livestock grazing, recreation, energy, and utility development are allowed. Any damage that permitted uses cause must be mitigated.
- **Class I (Intensive Use)** – About 500,000 acres are Class I. These lands are managed for concentrated use to meet human needs. Reasonable protection is provided for sensitive natural values and mitigation of impacts, and impacted areas are rehabilitated when possible.

The proposed solar facility as well as most of the proposed gen-tie line would be located on land designated by BLM Class M (Moderate Use). A portion of the gen-tie line Alternative E would cross areas designated as Class L (Limited Use) and all gen-tie line alternatives would cross a very small area of land designated as Class L upon entry into the Red Bluff Substation.

Programmatic Final Environmental Impact Statement for Vegetation Treatments Using Herbicide. The BLM's 2007 *Vegetation Treatments Using Herbicide Programmatic Final Environmental Impact Statement* (Herbicide PFEIS) and Record of Decision (ROD) outline allowable methods, chemicals, and application rates for herbicide use on BLM lands in 17 western states. Appendix B, Herbicide Treatment Standard Operating Procedures, of the Herbicide PFEIS, specifically outlines management strategies for noxious weeds and application of herbicides on BLM land. Table B-1, Prevention Measures, specifies avoidance measures to limit noxious weed infestation, and Table B-2, Standard Operating Procedures for Applying Herbicides, provides additional details related to herbicide application. The Herbicide PFEIS also compares and analyzes the impacts of various herbicide treatments, including cumulative impacts. This DHSP EIS addresses weed management strategies, including herbicide use, which would be required for invasive plant management in accordance with the Integrated Weed Management Plan for the DHSP in Appendix C.10. Analysis of herbicide use in the DHSP EIS is tiered to BLM's Herbicide PFEIS and ROD from September 2007. The whole Herbicide PFEIS and ROD are incorporated by reference in accordance with CEQA Guidelines (Title 14 CCR §15150) and NEPA (40 CFR § 1502.21). The Herbicide PFEIS and ROD are available for review at the BLM Palm Springs Field Office and online: http://www.blm.gov/wo/st/en/prog/more/veg_eis.html

1.9.2 Relationship to Other Federal Plans, Policies, Programs, and Laws

This section summarizes the other major federal plans, policies, programs, and laws that apply to the Proposed Action.

NEPA and CEQ Guidelines for Implementing NEPA

NEPA (42 USC. 4321 et seq.) declares a continuing federal policy that directs "a systematic, interdisciplinary approach" to planning and decision-making and requires the preparation of EISs for "major Federal actions significantly affecting the quality of the human environment." The CEQ Regulations for Implementing the Procedural Provisions of NEPA (40 CFR Parts 1500-1508) require federal agencies to identify and assess reasonable alternatives to proposed actions that will restore and enhance the quality of the human environment and avoid or minimize adverse environmental impacts. Federal agencies are further directed to emphasize significant environmental issues in project planning and to integrate impact studies required by other environmental laws and Executive Orders into the NEPA process. The NEPA process should therefore be seen as an overall framework for the environmental evaluation of federal actions. In processing ROW applications, BLM must also comply with the Department of the Interior's regulations applicable to implementing the procedural requirements of NEPA (43 CFR Part 46), as well as BLM's NEPA Handbook (H-1790-1).

Clean Air Act

The Clean Air Act (42 USC 7401-7661), as amended, regulates air pollution to improve air quality. It regulates air emissions from area, stationary, and mobile sources. This law also authorizes the U.S. Environmental Protection Agency to establish National Ambient Air Quality Standards to protect public health and the environment.

Endangered Species Act of 1973

The Endangered Species Act (ESA) (16 USC 1531-1543) and subsequent amendments provide guidance for the conservation of endangered and threatened species and the ecosystems upon which they depend. The USFWS administers the ESA. The major components of the ESA are:

- Provisions for the listing of threatened and endangered species;
- The requirement for consultation with the USFWS on federal projects that may affect listed species or their habitat;
- Prohibitions against "take" of listed species. Under the ESA, the definition of "take" is to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct"; and
- Provisions for permits to allow the incidental take of threatened and endangered species.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act of 1940 (BGEPA) (16 USC, 668, enacted by 54 Stat. 250) protects bald and golden eagles by prohibiting the taking, possession, and commerce of such birds and establishes civil penalties for violation of this act. Under BGEPA, take includes "disturb," which means "to agitate or bother a bald eagle or a golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, (1) injury to an eagle, (2)

a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior."

National Historic Preservation Act of 1966, as Amended

The National Historic Preservation Act (NHPA) (16 USC 470) requires federal agencies with jurisdiction over a proposed federal project to take into account the effect of the undertaking on cultural resources that are listed or eligible for listing on the National Register of Historic Places (NRHP). The act requires that the agencies afford the State Historic Preservation Office, any potentially affected Indian tribe, and the Advisory Council on Historic Preservation with an opportunity to comment on the undertaking.

Federal Power Act

Under section 24 of the Federal Power Act, the following actions result in a withdrawal of public land: the filing of an application for (or issuance of) a preliminary permit with the Federal Energy Regulatory Commission (FERC), the filing of an application for a license (with FERC) and the issuance of a license by FERC. A withdrawal created under the Federal Power Act on BLM-managed land reserves the public land for use by a pending power project, and BLM recognizes that the licensee has a priority right to use the withdrawn lands. BLM has the authority to authorize ROW on the withdrawn land, but any ROW cannot infringe on the licensee's priority right to use the land. A Federal Energy Regulation Commission (FERC) withdrawal area for the proposed Eagle Mountain Pumped Storage Project overlaps the south-western parcel of Alternative 4. Project compliance with the Federal Power Act is discussed in Sections 3.11 and 4.11.

1916 Organic Act, as Amended

The Secretary of the Interior is responsible for protecting units of the National Park System pursuant to the National Park Service 1916 Organic Act (16 U.S.C. 1, 2, 3 and 4) which consists of the Act of August 25, 1916 (39 Stat. 535) and amendments thereto.

Energy Policy Act 2005

Title II, Section 211 of this act sets forth the "sense of Congress" that the Secretary of the Interior should seek to have approved non-hydropower renewable energy projects on the public lands with a generation capacity of at least 10,000 MW by 2015.

Executive Order 13212

Mandates that agencies act expediently and in a manner consistent with applicable laws to increase the production and transmission of energy in a safe and environmentally sound manner.

Secretarial Order 3285A1

Establishes the development of renewable energy as a priority for the Department of the Interior.

1.10 OTHER APPLICABLE PLANS AND PROGRAMS

This section summarizes the major state and local laws, plans, policies, and programs that apply to the Proposed Action and alternatives.

California Renewable Portfolio Standard

In 2002, the California Legislature enacted a statute establishing its RPS program, with the goal of increasing the percentage of renewable energy in the State's electricity mix to 20 percent by 2017.[2] State energy agencies recommended accelerating that goal in their 2003 Energy Action Plan. Those recommendations resulted in changes in the law. In 2006, Senate Bill 107 (Simitian and Perata 2006) modified the RPS to require the "investor-owned utilities" to procure 20 percent of retail sales from renewable energy by 2010. In November 2008, the Governor signed Executive Order S-14-08 to require all retail sellers of electricity in California serve 33 percent of their load with renewable energy by 2020.

The Renewable Electricity Standard (RES), which implemented the 33 percent RPS requirement statewide, was adopted by the California Air Resources Board in September 2010, as required by Executive Order S-21-09 (17 CCR Sections 97000 to 97012). However, the RES regulations were preempted by legislative action in April 2011, as described below.

California Renewable Energy Resources Act of 2011 (SB X1-2)

In April 2011, Senate Bill 2 of the 1st Extraordinary Session (SB X1-2) was signed into law. SB X1-2 expressly applies the new 33 percent RPS by December 31, 2020 to all retail sellers. It also established standards for interim years of: an average of 20 percent from 2011 through 2013, a minimum of 20 percent thereafter through 2016, and a minimum of 25 percent by December 31, 2016. This codified the requirement to achieve 33 percent RPS statewide by the end of 2020, a key element of the 2008 AB 32 Scoping Plan (CARB 2008).

Riverside County General Plan (2003)

Portions of the proposed interconnection lines are within Riverside County's Desert Center Planning Area. The Riverside General Plan aims to preserve the natural character of the unincorporated areas of Riverside County and the Desert Center. The plan encourages clustering of development for the preservation of contiguous open space, aims to limit off-road vehicle use, and requires new development to comply with desert tortoise critical habitat designation requirements.

Air Quality Management District

The proposed project locations are within the jurisdiction of the SCAQMD, which reviews the plans and specifications for construction in the proposed project area. SCAQMD would assess emissions and possible air contamination resulting from construction and operational activities (e.g., road dust, windblown contaminants, and emissions from construction activities).

California Endangered Species Act

The California Endangered Species Act (CESA) (Fish and Game Code 2050 et seq.) establishes the policy of the state to conserve, protect, restore, and enhance threatened or endangered species and their habitats. CESA mandates that state agencies should not approve projects that would jeopardize the continued existence of threatened or endangered species if reasonable and prudent

[2] To qualify as eligible for California's RPS, a generation facility must use a designated renewable resource or fuel, as in the Overall Renewable Energy Program Guidebook (CEC Publication # CEC-300-2007-003-ED2-CMF, adopted December 19, 2007).

alternatives are available that would avoid jeopardy. There are no state agency consultation procedures under CESA. For projects that affect a species that is both state and federally listed, compliance with the federal ESA will satisfy CESA if the CDFG determines that the federal incidental take authorization is "consistent" with CESA under Fish and Game Code Section 2080.1 and issues a Consistency Determination to that effect. For projects that will result in a take of a state-only listed species, the applicant must apply for a take permit under Section 2081(b).

California Fish and Game Code, Streambed Alteration Agreements

Sections 1601 to 1603 of the California Fish and Game Code require notifying CDFG prior to constructing any project that would divert, obstruct or change the natural flow, bed, channel, or bank of any river, stream, or lake. Preliminary notification and project review generally occur during the environmental review process. When an existing fish or wildlife resource may be substantially adversely affected, CDFG is required to propose reasonable project changes and/or mitigation to protect the resource. These modifications are formalized in a Streambed Alteration Agreement that becomes part of the plans, specifications, and bid documents for the project.

State Historic Preservation Office Review

The California SHPO reviews and comments on potentially impacted historic resources under federal jurisdiction identified as part of the NHPA process for the project.

California Generator Interconnection Process

Electricity from the project would be delivered to customers by the California Independent System Operator Corporation (CAISO), acting as a transmission provider, through the transmission system owned by SCE and Pacific Gas and Electric (PG&E). In order to obtain the right to connect to the CAISO grid, a proposed electric generating facility with more than a 20-MW capacity must first apply for a queue position with CAISO through the Generator Interconnection Procedures (GIP) process. An application for the project's queue position was submitted in July 2010, obtaining position 643AE. Next, the proposed generator must obtain a Feasibility Study, a System Impact Study, and a Facility Study from CAISO. Finally, the proposed generator must execute a Generator Interconnection Agreement with CAISO.

1.11 INCORPORATION BY REFERENCE

The Desert Sunlight Solar Farm (DSSF) Final EIS is incorporated into this document by reference. The DSSF Final EIS, prepared by BLM with the California Public Utilities Commission (CPUC) as the CEQA lead agency, analyzes the impacts of the DSSF project, which was proposed by First Solar on a site directly north of the proposed DHSP. The EIS was prepared to a CEQA-equivalent standard under Section 15221 of the CEQA Guidelines. Joshua Tree National Park is north, east, and west of the DSSF site; at its closest point, the DSSF site is approximately 1.4 miles southwest of the national park boundary. The DSSF Final EIS evaluates the environmental effects of the 550 MW photovoltaic (PV) solar field constructed on 4.5- to 8-feet high, fixed-tilt panels on approximately 4,000 acres of BLM-managed public land. The Southern California Edison (SCE)-proposed 500/220-kV Red Bluff Substation was also considered a connected action to the DSSF project, and was analyzed in the DSSF Final EIS. The DSSF Final EIS also analyzes a gen-tie line going from the project site to the Red Bluff Substation. The DSSF Final EIS analyzes alternatives for the solar facility, gen-tie line, and Red

Bluff Substation based on their environmental impacts under NEPA (and pursuant to CEQA, under a CEQA-equivalent review process) during construction (26 months), operation and maintenance (30 years), and decommissioning. Cumulative impacts with other past, present, and reasonably foreseeable projects and actions were also considered. An amendment to the CDCA Plan allowing the use of the site for solar energy generation was also considered in the EIS. The DSSF Final EIS provides responses to public comments received by the BLM on the project during a 90-day public review period.

The DSSF Final EIS analyzed 3 action alternatives (which incorporate different combinations of 2 solar field alternatives, 3 gen-tie alternatives, 2 substation alternatives, and 2 substation access road alternatives) and 3 no-action alternatives. Biological, cultural, paleontological, geotechnical, and geoarchaeological studies were conducted for the project area, which, in some cases, included all or part of the DHSP solar facility site. Biological surveys were also conducted for portions of all gen-tie alternatives considered in the DSSF Final EIS, including the selected alternative, which is equivalent to gen-tie Alternative B considered in this EIS. These surveys, conducted for botanical and wildlife species in 2010, found the presence of some sensitive species, including Emory's crucifixion thorn and desert tortoise. Cultural surveys were conducted on portions of the area covered by DHSP Alternatives B, C, and D. Paleontological sensitivity studies were conducted on portions of DHSP Alternatives B and C. A hazardous materials storage and contaminated sites database search, traffic study, and environmental justice analysis were also conducted for the project area. The project also completed a jurisdictional delineation for waters on the project site, concluding that there were no waters of the U.S. on site. The project's emissions and noise levels were estimated for construction and O&M, and groundwater requirements were also estimated.

First Solar also provided a report entitled "Gen-Tie Undergrounding Report; Desert Sunlight Solar Farm Project," which analyzed the costs associated with undergrounding the transmission line for that project. BLM evaluated the information included in First Solar's report and determined that, based on the BLM's own experience, expertise, and research, constructing the DSSF gen-tie line underground would not be feasible.

Applicant measures and mitigation measures were developed to reduce the impacts of the DSSF project to the extent feasible. Conservation measures identified in the USFWS Biological Opinion, such as maintaining desert tortoise habitat connectivity and acquiring compensation lands, were adopted in the DSSF ROD. A cultural mitigation measure required development of a Memorandum of Agreement under Section 106 for resolution of effects on historic and cultural resources (the MOA is included as Appendix 4 of the DSSF Record of Decision). The DSSF Final EIS determined that even with mitigation measures, the impacts on air resources, cultural resources, and visual resources could not be reduced to less-than-significant levels under CEQA and would be unavoidable. The CPUC determined under CEQA that the environmentally superior alternative would combine either alternative solar farm layout with the eastern substation alternative (Substation A, Access Road 2), and Gen-Tie Alternative A-2, which utilizes SCE right-of-way to go from the solar facility site to Substation A. BLM's preferred alternative combined Solar Farm layout B (full footprint) with Gen-Tie Line A-1 (the same as DHSP's Alternative B), and Substation A with Access Road 2.

The DSSF EIS is publicly accessible at the Palm Springs – South Coast Field Office or online: http://www.blm.gov/ca/st/en/fo/palmsprings/Solar_Projects/Desert_Sunlight.html.

CHAPTER 2 – DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.1 OVERVIEW OF ALTERNATIVES DEVELOPMENT

This chapter provides a detailed description of the Desert Harvest Solar Project (DHSP) and associated facilities, including a generation interconnection line (gen-tie line) proposed by EDF Renewable Energy (EDF or Applicant) and alternatives to the proposed project. The Applicant's objective for the DHSP is to construct and operate a 150-megawatt (MW) renewable solar energy generating facility. The DHSP has a minimum expected lifetime of 30 years, with an opportunity of 50 years or more with equipment replacement, repowering, and renewals of the applicable permits, approvals and authorizations for the DHSP (which renewals would be subject to future discretionary agency action).

The BLM has identified a full range of reasonable alternatives to analyze in this EIS. This EIS analyzes the potential environmental impacts of twelve alternatives for the project and its components: one no action alternative, two no project alternatives, four solar facility alternatives, one no gen-tie alternative, and four gen-tie alternatives as follows:

- Alternative 1: No Action (No Plan Amendment)
- Alternative 2: No Project Alternative (with Plan Amendment to Find the Site Suitable for Solar Energy Development)
- Alternative 3: No Project Alternative (with Plan Amendment to Find the Site Unsuitable for Solar Energy Development)
- Alternative 4: Proposed Solar Project
- Alternative 5: Solar Project Excluding WHMA
- Alternative 6: Reduced Footprint Solar Project
- Alternative 7: High-Profile Reduced Footprint Solar Project
- Alternative A: No Gen-Tie
- Alternative B: Proposed Gen-Tie (Shared Towers)
- Alternative C: Separate Transmission Towers within Same ROW
- Alternative D: Cross-Valley Alignment
- Alternative E: New Cross-Valley Alignment

The alternatives identified during the screening process include those proposed by the Applicant as part of the design of the Proposed Action, those proposed by the BLM as part of environmental review, and ideas for potential alternatives suggested by cooperating agencies and the public during the EIS scoping period. The alternatives that responded to the purpose and need for the proposed project and are otherwise reasonable (as described in Section 6.6.1 (Reasonable Alternatives) of the BLM NEPA Handbook (H-1790-1)), are carried forward in the EIS for full analysis. Those that did not are eliminated from further detailed analysis and are discussed briefly in Section 2.17. In order to have a complete action alternative, the authorized officer could choose any one of the solar generation facility action alternatives, Alternative 4 through 7, and any one of the gen-tie action alternatives, Alternative B through Alternative E. For a complete no-project alternative, the deciding official could choose either Alternative 2: No Project Alternative (with

Plan Amendment to Find the Site Suitable for Solar Energy Development) or Alternative 3: No Project Alternative (with Plan Amendment to Find the Site Unsuitable for Solar Energy Development) with Alternative A: No Gen-Tie. For a complete no-action alternative the deciding official could choose Alternative 1: No Action and Alternative A: No Gen-Tie.

Technical information about the project presented in this chapter was provided by the Applicant. All numbers referring to land disturbance, equipment, schedule, mileage, and workforce are based on the most up-to-date engineering available from the Applicant. These numbers generally represent conservative estimates for purposes of analyzing impacts. In response to public and government agency input, the Applicant is continuing to evaluate project design and construction methods to determine whether potential environmental impacts can be further reduced. If so, any impacts dependent on the project disturbance area, equipment used, and schedule estimates may be further reduced based on the final engineering and permit requirements for the project components. The Applicant's information was provided primarily in the revised Plan of Development for the DHSP, submitted on April 26, 2011 to the BLM, and on the Applicant's responses to BLM data requests (enXco 2011a-e).

This chapter provides information on the proposed solar facility (Section 2.5) and solar facility alternatives (Sections 2.2, 2.3, 2.4, 2.6, 2.7, and 2.8), the proposed gen-tie line (Section 2.10) and gen-tie alternatives (Sections 2.9 and 2.11 through 2.13), a summary comparison of effects by alternative (2.14), the agency preferred alternative (2.15), and the California Environmental Quality Act (CEQA) environmentally superior alternative (2.16) and the alternatives considered but eliminated (Section 2.17).

2.1.1 CEQA Alternatives

Under CEQA, an EIR is required to identify and assess reasonable alternatives that have the potential to avoid or minimize the impacts of a project. The State CEQA Guidelines require consideration of the No Project Alternative (Section 15126.6(e)) and selection of a range of reasonable alternatives (Section 15126.6(d)). The EIR must adequately assess these alternatives to allow for a comparative analysis for consideration by decision-makers. The State CEQA Guidelines (Section 15126.6(a)) state that:

> *An EIR shall describe a reasonable range of alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives. An EIR need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decisionmaking and public participation.*

The applicant's CEQA objectives are listed in Section 1.3. The alternatives detailed in Section 2.2 through 2.17 would comply with CEQA's requirements for the project alternatives.

2.1.2 Connected or Cumulative Actions

Connected actions are defined by the BLM Handbook H-1790-1 as those actions that are "closely related" and "should be discussed" in the same NEPA document (40 CFR 1508.25(a)(1)). Actions are connected if they automatically trigger other actions that may require an EIS; cannot or will not proceed unless other actions are taken previously or simultaneously; or if the actions are

interdependent parts of a larger action and depend upon the larger action for their justification (40 CFR 1508.25 (a)(i, ii, iii)). Connected actions are limited to actions that are currently proposed (ripe for decision). There are no connected actions for the EIS.

Cumulative actions are defined by the BLM NEPA Handbook H-1790-1 as proposed actions which potentially have a cumulatively significant impact together with other proposed actions and "should be discussed" in the same NEPA document (40 CFR 1508.25(a)(2)). Cumulative actions are identified in Section 4.1 of this EIS, which includes the cumulative geographic scope for each issue evaluated in this EIS, and identifies the relevant reasonably foreseeable future projects relevant to each resource for purposes of the cumulative effects analysis.

2.2 ALTERNATIVE 1: NO ACTION (NO PLAN AMENDMENT)

Under NEPA, the No Action Alternative is used as a benchmark of existing conditions by which the public and decision makers can compare the environmental effects of the Proposed Action and the alternatives. Under Alternative 1, the DHSP would not be approved (all components of the project would be denied), no ROW grant would be issued, and no CDCA Plan amendment would be approved to make the land available for large-scale solar development.

This No Action Alternative does not preclude future solar development on the project location; therefore, it is possible that another project proponent would submit a ROW application to the BLM for use of the site for solar generation or other land uses. The solar generation portion of the site is currently within BLM Land Use Class M, which allows a wide variety of uses such as mining, livestock grazing, recreation, energy, and the development of new utility facilities.

2.3 ALTERNATIVE 2: NO PROJECT ALTERNATIVE (WITH PLAN AMENDMENT TO FIND THE SITE SUITABLE FOR SOLAR ENERGY DEVELOPMENT)

With this No Project Alternative (with Plan Amendment to Find the Site Suitable for Solar Energy Development), the DHSP would not be approved (all components of the project denied), no ROW grant would be issued to the Applicant, and the CDCA Plan would be amended to find the project area, or based on resource conflict only a portion of it, suitable for solar energy development.

With such an amendment, a similar solar project could be proposed on the project site. Project impacts associated with such a future project would be analyzed at the time a project is proposed through submission of a ROW application. As these impacts from such a future project are not foreseeable, they are not analyzed in the No Project Alternative (with Plan Amendment to Find the Site Suitable for Solar Energy Development).

2.4 ALTERNATIVE 3: NO PROJECT ALTERNATIVE (WITH PLAN AMENDMENT TO FIND THE SITE UNSUITABLE FOR SOLAR ENERGY DEVELOPMENT)

With this No Project Alternative (with Plan Amendment to Find the Site Unsuitable for Solar Energy Development), the DHSP would not be approved (all components of the project denied), no ROW grant would be issued to the Applicant, and the CDCA Plan would be amended to find the project area unsuitable and unavailable for large-scale solar energy development.

This alternative would not place a special designation or level of protection on the project site. If the project study area were not available for large-scale solar development, it would still remain available for other types of uses allowable on BLM land.

2.5 ALTERNATIVE 4: PROPOSED SOLAR PROJECT

The following section describes Alternative 4: Proposed Solar Project, including the project structures and facilities, construction, operations, and decommissioning activities, and Applicant Measures. Applicant Measures (AM) are considered design features and performance commitments by the Applicant, and are incorporated into the project design. All AMs for the proposed solar project and gen-tie line (see Table 2-5) would be required for solar facility Alternatives 4, 5, and 6, and gen-tie line Alternatives B, C, D, and E.

2.5.1 Proposed Amendments to the CDCA Plan

BLM authorization of a ROW grant for Alternative 4, 5, 6 or 7 would require a CDCA Plan Amendment. The Plan Amendment would identify the project study area suitable and available for large-scale solar energy development.

2.5.2 Actions or Elements Common to All Action Alternatives

Solar facility Alternative 4, Alternative 5, and Alternative 6 would all be located in the same geographic area, on BLM-administered land north of Desert Center in Riverside County (see Figure 2-1, Project Overview Map, in Appendix A). The alternatives would use the same solar technology, and would require the same structures and components, including an operations and maintenance (O&M) facility, an electrical collection system, an on-site substation, a switchyard, site security, fencing, and lighting, access roads, a reverse osmosis system and water wells, a concrete batch plant, and an electrical interconnection. Details of each of these components are provided in Section 2.5.4, Structures and Facilities, and would be the same for Alternatives 4, 5, and 6. A majority of the information provided in Section 2.5.4 would also apply to Alternative 7, aside from the overall height of the panels. Construction, operation, and decommissioning activities for the solar facility alternatives would be the same for Alternative 4, 5, 6, and 7. Any differences in construction, operation, and decommissioning activities for the solar facility alternatives have been identified in the sections that follow.

Alternatives 4, 5, 6, and 7 (and Alternatives B, C, D, and E, described in Sections 2.10 through 2.13) would all require an amendment to the CDCA plan to find the project area suitable and available for large-scale solar energy development. The following amendments would be made to the CDCA Plan:

- The addition of the following text for the solar facility site: “Site approved for solar generation per the Desert Harvest Solar Project Final Environmental Impact Statement and Proposed California Desert Conservation Area Plan Amendment (2012).”
- The addition of the following text for the gen-tie line: “Permission granted to construct outside of a designated utility corridor per the Desert Harvest Solar Project Final Environmental Impact Statement and Proposed California Desert Conservation Area Plan Amendment (2012).”
- Reference to the approved alternative solar facility and approved alternative gen-tie alignment per Figure 2-1 (Appendix A) of this Final EIS.

2.5.3 Overview

Alternative 4 would be a 150 MW nominal capacity, alternating current (AC) solar photovoltaic (PV) energy-generating project that would be expected to produce a minimum of 240,000

megawatt-hours per year[1] (MWh/y) with a net capacity factor of 16 to 18 percent.[2] The project would be located on lands administered by the BLM, Palm Springs-South Coast Field Office in Riverside County, 5 miles north of Desert Center. The project would be located on 1,208 acres, and would be comprised of two separate parcels separated by a desert wash. The northern parcel consists of 1,053 acres and the southern parcel consists of 155 acres. Figure 2-2 in Appendix A illustrates Alternative 4.

2.5.4 Structures and Facilities

The structures and facilities presented in the following sections are based on the most up-to-date information available. However, the project disturbance area, equipment used, and schedule estimates may be reduced and/or modified consistent with this analysis based on the final engineering and permit requirements for the project components.

The proposed solar facility would consist of several main components:

- Main generation area—PV arrays, switchyard, inverters, overhead lines, and access corridors;
- O&M Facility – either on or off site;
- On-site electrical substation and switch gear; and
- Site security, fencing, and lighting.

Table 2-1 presents a breakdown of site acreage for each solar facility component.

Table 2-1. Estimated Overall Project Acreage

Project Component	Temporary (acres)[1]	Permanent (acres)[1]
Current BLM right-of-way case record (Northern Parcel / Southern Parcel; respectively)	1,208 (1,053 / 155)	1,208 (1,053 / 155)
Solar panel field	1,200	1,200
Parking and administration areas	3.0	3.0
Access corridors for maintenance vehicles	250	250
Construction laydown area (to be converted to access road at end of construction)	(10)	0
Gravel access roads for the circulation of emergency vehicles	10	10
On-site substation	3	3
Area permanently covered by at-grade items (footprint of piles, power conversion station, transformer, PV combining switchgear, on-site substation, on-site overhead line poles, O&M Facility)	10	10
Water storage ponds	2	1
Approximate maximum area shaded by PV modules	1,000	1,000
Area outside of BLM right-of-way disturbed by trenching for solar facility	11	0
Total Disturbance	1,219	1,208

1 - Disturbance acreages shown are not additive.

[1] The number of megawatt-hours per year is a measure of the system's energy, which is the amount of power generated by the system during a year.

[2] The net capacity factor of a power plant is the ratio of the actual output of a power plant over a period of time and its potential output if it had operated at full nameplate (rated) capacity the entire time.

PV Panels and Generation Area

The project may use a variety of PV technologies, including, but not limited to:

- Crystalline silicon panels
- Copper indium gallium selenide panels

As discussed in Section 2.5.5, the Applicant would use construction site preparation techniques that prepare the site for safe and efficient installation and operation of PV arrays. The Applicant proposes to use site preparation techniques that would minimize the required volume of earth movement, including a "disc and roll" technique that uses farm tractors to till the soil over much of the solar facility site and then roll it level, as well as "micrograding" or "isolated cut and fill and roll" of other areas of the site to trim off high spots and use the material to fill in low spots. The solar field would cover 1,208 acres in extent and 100 percent of the solar field would be impacted by some form of soil disturbance, either from compaction, micro-grading, or disc-and-roll grading. Panel foundations would permanently disturb 10 acres of on-site soils. Internal access roads would permanently disturb 210 acres to 260 acres. Installed panels would shade up to an estimated 1,000 acres of the solar facility acreage.

If a tracking system is used for the PV modules, either high-profile or low-profile trackers could be used. Tracking systems have a motor that rotates the PV modules from east to west during the day to track the sun across the sky. The low-profile system is analyzed for Alternatives 4 through 6, and the high-profile system is analyzed for Alternative 7. With a low-profile tracking system, each panel would be up to 6 feet high. The solar field would cover the majority of the project area, as shown in Figure 2-3 in Appendix A. The field of panels consists of repeating blocks of 1.44 MW (alternating current [AC]). The approximate dimensions of an array block consist of 12,480 panels, separated into four quadrants (northwest, southwest, northeast, southeast). Within each quadrant, there would be 6 rows of 10 or 11 48-panel strings. Each block would employ two 720 kW inverters, set along the access roads, in the middle of the panel array area. Figure 2-4 in Appendix A illustrates a typical low-profile photovoltaic array, and Figure 2-5 in Appendix A illustrates a typical array configuration. Figure 2-6 in Appendix A shows typical module specifications, and Figure 2-7 in Appendix A shows typical tracker specifications.

The panel field would be laid out by installing vertical H-pile galvanized steel beams directly into the ground by means of a small pile-driver. A preliminary walk-through by civil engineers suggests that this foundation would be sufficient to meet geotechnical requirements for wind stability. Site-specific soil tests would be required to validate the preliminary engineering. If tests conclude that further foundations are required, then the vertical H-pile galvanized steel beams would be attached to concrete ballasts.

The rows of panels would be spaced to prevent shading of adjacent panel rows and to allow access between the rows for panel maintenance. Between each 720 kW power block would be 14- to 26-foot-wide roads running east-to-west, and 14-foot-wide roads running north-south to allow fire and vehicular access for the maintenance of the electrical facilities.

Operations and Maintenance Facility

The Applicant's preference is to use an existing commercial or industrial building in the project vicinity for ongoing O&M facilities. Currently, the Applicant is evaluating the feasibility of

using an existing building within 10 miles of the project site, with existing county road access. The specific building that would be used has not been identified. This O&M facility would accommodate offices for up to 8 staff, a parts storage area, plant security systems, and project monitoring equipment

If an onsite O&M facility were required, it would be located next to the project substation, at the northwest corner of the site (see Figure 2-3 in Appendix A). The building would consist of a 120-foot-wide by 240-foot-long (an estimated 0.7 acres) prefabricated building set on concrete slab-on-grade poured in place. The building would be an estimated 19 feet tall at its highest point. The facility would be designed for project security, employee offices, and parts storage. The structure would accommodate up to 8 personnel, subject to the applicable accessibility requirements.

Electrical Collection System

The PV modules would be electrically connected by wire harnesses and combiner boxes that would collect power from several rows of modules and feed the project's power conversion stations via direct current (DC) cables placed in underground covered trenches. DC trenches would be an estimated 3 feet deep and from 1.5 to 2.5 feet wide. The bottom of each trench would be filled with clean fill surrounding the DC cables and the remainder of the trench would be back-filled with native soil and compacted to 90 percent (95 percent when crossing under roadways). Power screeners may be used on site for a period of time (less than one year) to extract the required clean fill from native soils excavated during trenching for use as bedding material in the trenches. A power screener is a motorized piece of equipment that uses moving screens to filter soils to a particular granularity. Use of this equipment has been included in the air quality analysis.

Each power conversion station comprises an inverter located within an enclosure and connected to a transformer. The PV inverters would convert the DC electric input into grid-quality AC electric output. The AC electrical output would be transmitted from the power conversion station to the adjacent transformer. The transformer would step up the voltage of the AC electrical input and then would transmit the power via underground lines in covered trenches to the PV combining switchgear. AC trenches would be an estimated 3 feet deep and from 8 inches to 6.5 feet wide, depending on the number of cables buried adjacent to one another, and would also be used to house fiber optic cables. The bottoms of the trenches would be filled with sand surrounding the fiber optic cables, and the remainder of the trench would be back-filled with native soil and compacted. The PV combining switchgear would transmit the power to overhead lines within the solar facility site; the overhead lines would transmit the electrical output to the on-site substation. At the on-site substation the voltage would be stepped up to 220 kV and routed via a new gen-tie line to the approved Southern California Edison (SCE) Red Bluff Substation. The alternative gen-tie line alignments (Alternatives B through E) are described in Sections 2.10 through 2.13. A power conversion station and transformer would be located within each PV array. The power conversion station enclosures would be an estimated 11.5 feet tall. The transformers would be an estimated 6.3 feet tall. The transformer would be placed on a pre-cast concrete pad. Each pad would be delivered by flatbed truck during construction, in combination with a power conversion station vault, and installed by crane from the truck.

Each PV combining switchgear would collect the power from a number of arrays. The PV combining switchgear cabinets would be an estimated 7.5 feet tall and would be dispersed amongst the arrays. Each PV combining switchgear would be placed on pre-cast 32-foot by 14.5-foot concrete pads, delivered and installed in the same manner as transformer pads and power conversion station vaults.

High-capacity 34.5 kV collection system lines would connect the power output from the PV combining switchgear to the on-site substation via overhead lines. These overhead lines would be supported by wooden poles an estimated 52 feet above finished grade. The overhead lines would span a distance of an estimated 150 feet from pole to pole. The on-site electrical collection system would be designed to minimize electrical losses within the solar facility site prior to delivery to the on-site substation.

Because the project site is on two separate parcels, electrical connection between the southern parcel and on-site substation would be required. The Applicant would construct either an underground or overhead connection for a distance of 3,000 feet between the electrical power conversion stations on the southern and northern parcels. The overhead alternative could involve reconductoring (upgrading) an existing SCE distribution line; however, the details of this potential reconductoring cannot be known at this time, prior to completion of interconnection studies for the project. Any disturbance associated with reconductoring would be expected to occur on previously disturbed access roads and would not be expected to result in visual changes. The underground connection would run along an easement on the eastern side of Kaiser Road. The route would parallel an existing natural gas line adjacent to Kaiser Road. Construction of the line would occur concurrently with construction of the project's gen-tie line, using the same equipment and personnel. For an underground connection, trenching would be 3 to 6 feet wide. Temporary disturbance would be up to 75,000 square feet and trenching would disturb 18,000 square feet within the disturbance footprint.

One or more meteorological stations would be installed at the solar facility site prior to construction in order to track weather patterns. The meteorological station(s) would be attached to the data acquisition system to collect data for analysis and system monitoring. The meteorological station(s) would be 6 feet in height and would be set on a stainless-steel tripod base an estimated 10 feet by 10 feet.

On-Site Substation

The project substation would be located in the northwest corner and would cover an estimated 5 acres (see Figure 2-3 in Appendix A). Figure 2-8 in Appendix A depicts the electrical plan for the on-site substation. At the on-site substation, the voltage of the solar-generated electricity would be stepped up to 220 kV. The project's primary access road would serve the on-site substation.

Switch gear

Electrical switch gear serves to interconnect an electrical generator to the grid. The switch gear would be constructed and operated by the Applicant. The project switch gear would occupy an area an estimated 400 feet long and 400 feet wide in the west corner of the northern parcel immediately adjacent to the substation and within the fenceline. Surge arresters at the high-voltage bushings would protect the transformer(s) from surges caused by lightning or other disturbances.

The transformer(s) would be set on a concrete pad within a containment area designed to hold any accidental releases of transformer oil. All transformers would be free of polychlorinated biphenyls. The high-voltage side of the transformer(s) would be connected to the plant's switchyard.

A small control building would be located nearby the switch gear and would be accessible to authorized high-voltage personnel only. The building would house electrical control equipment, battery/DC systems for device operation, safety relays, and other similar electrical equipment. This building would interconnect with the main control room in the operations building for monitoring of the substation.

Site Security, Fencing, and Lighting

Site security is critical for the Applicant due to the high value of the solar panels used in construction of the project, and for the safety of personnel and the public. At the onset of construction, site access would be controlled for personnel and vehicles. A security fence, which would also be the permanent fence, would be installed around the plant site boundary. At this time, all required laydown areas are expected to be contained within the defined solar facility boundaries, and thus no additional temporary fencing would be required. In addition, security would be enhanced with motion detectors, facility lighting, and cameras in key locations. Exterior lighting would comply with current Title 24 regulations from the State of California. Security would be maintained as required by the engineering, procurement, and construction (EPC) contractor or a suitable subcontractor to maintain public safety and the security of the facilities.

Security fencing would be erected around the entire perimeter of the project area, with an access gate immediately north of the substation prior to beginning construction. An emergency gate would be located in the southeast corner, with access to Beekley Road (north of Rice Road, west of Carr Road). The site perimeter fence would be 8 feet high and have an overall height of no more than 10 feet from the bottom of the fabric to the top barbed wire. The fence would have top rail, bottom tension wire, and three strands of barbed wire mounted on 45 degree extension arms. Posts would be set in concrete.

Controlled access gates would be located at the entrance to the facility, immediately north of the substation (see Figure 2-8 in Appendix A). Site gates would be swing or rolling access gates. Access through the main gate would require an electronic swipe card, preventing unaccompanied visitors from accessing the facility or construction area. All visitors would be logged in and out of the facility during normal business hours. Visitors and non-employees would be allowed entry only with approval from a staff member of the facility, or from the BLM. Between 1 and 3 security personnel would be located on the project site during the daytime operation hours of 7am to 5pm. If an on-site O&M facility is used, security personnel would be located on-site at all times. Visitors would be issued passes that are worn during their visit and returned to the main office when leaving.

Except as provided below, lighting during construction would be limited to the staging area for the construction trailers, parking area, and site security facilities. Lighting would be located on temporary service poles an estimated 18 feet in height. Power would come from a connection to the local distribution system or from an on-site generator. If required, construction lighting would be limited to that needed to ensure safety. It would be focused downward, shielded, and

directed toward the interior of the site to minimize light exposure to areas outside the construction area.

During operations, lighting would be limited to shielded, area-specific lighting for security purposes for the on-site substation. Power for lights would come from the local distribution system. Service lighting would be placed in key safety-sensitive areas, such as the switchyard of the on-site substation. The level and intensity of lighting during operations would be the minimum needed for security and safety purposes. Security lights would use motion sensor technology that would be triggered by movement at a human's height. There would be no lights around the project perimeter, in order to minimize the project's visual impact on surrounding receptors and roads. Sensors on the security fencing would alert security personnel of possible intruders. Lights on the site would be shielded and focused downward and toward the interior of the site to minimize lighting impacts on the night sky and to neighboring areas. Portable lighting may be used occasionally and temporarily for maintenance activities during operations.

Access Roads

The primary point of access to the project site would be a 20 foot-wide access road connecting the northwest corner of the solar facility to Kaiser Mine Road.

Access within the project area would be provided by 14 to 26 foot-wide unpaved, ungraveled roads running east-west, and 14 foot-wide roads running north-south that would be cleared, graded, and covered with aggregate and compacted to 90 percent to allow fire and maintenance vehicle access. Gravel and/or aggregate would be sifted from on-site soil or obtained from a BLM-approved commercial quarry within 2 miles of the project site. The total length of on-site roads would be up to 109 miles, and the total area that would be covered by roads would be 210 to 260 acres. Roads are shown on Figure 2-3 in Appendix A.

Reverse Osmosis System and On-Site Wells

The proposed solar facility proposes to draw water from two new and/or existing local wells to meet construction water demands, one of which would continue to be used for project operations. Both wells would be available for use during construction to provide flexibility in the water supply and in the event of a well malfunction.

The potential locations for the construction of two new on-site wells are at the northeastern and northwestern areas of the project site, as depicted in Figure 2-1 in Appendix A. As an alternative to new wells, DHSP may use nearby (within 10 miles) off-site active wells that have a reported individual (per well) production capacity of between 800 and 2,200 acre-feet per year (BLM 2011). If off-site wells are used, water would be trucked to the on-site water treatment facility described below. No new roads would be required and no new ground disturbance would occur as a result of using off-site wells. Off-site well locations are depicted on Figure 2-1 in Appendix A.

The Applicant would perform the necessary studies and secure the necessary permit(s) to install the well(s). In addition, sampling and analysis in accordance with established protocols and with appropriate analytical test methods would be performed to assess water sufficiency and quality at each active well of appropriate capacity. An analysis of impacts of project water consumption on water availability in the Chuckwalla Groundwater Basin is provided in Section 4.22.

A water treatment facility and demineralization evaporation pond are required to treat well water containing total dissolved solids (TDS). At this time, it is not known whether the groundwater at the project site contains high levels of TDS. Because panel washing requires water with very low TDS, a water treatment system consisting of a double-pass reverse osmosis (RO) system may be installed near the main O&M well, most likely adjacent to the on-site project substation. The water treatment facility would be enclosed in a small structure and would be an estimated 6 feet wide by 12 feet deep and an estimated 6 feet high. The facility would consist of three flexible PVC hoses: one input hose from the well water source, two output hoses with demineralized water going to the water trucks or tanks, and the reject water going to the demineralization evaporation pond. This system would produce up to an estimated 20 gallons per minute (gpm) of low-TDS water and an estimated 9 gpm of reject water. This reject water would be piped to a lined evaporation pond with four sections comprising an estimated 1 acre total. Residue would be periodically removed from the ponds and disposed of at an approved facility. The Applicant would re- purpose one of the construction holding ponds described in Section 2.5.5, Construction Water Requirements and Sources as a settling pond for RO reject water.

Concrete Batch Plant

During construction, existing commercial ready-mix concrete supply would be used where feasible. If unavailable, a temporary, two-acre concrete batch plant would be installed in the construction laydown area. The concrete source materials would be purchased from a commercial source. The batch plant would be removed at the end of the construction period.

Electrical Interconnection

The proposed gen-tie line to interconnect the project to the electrical grid is described in Section 2.10.

Telecommunications Equipment

Telecommunication equipment for the project site will reside within the on-site substation structure. All fiber optic communication lines necessary to support the on-site telecommunication equipment would be located on the same poles used to support the gen-tie line. The communication lines would originate from the on-site project substation and terminate in the utility substation into the SCE communication equipment at the Red Bluff Substation.

If an offsite O&M building is used, wireless equipment would be installed at the O&M building with line-of-site wireless communication to the on-site project substation. Data, voice and other telecom packets would be sent from the substation to the O&M building and substation. The onsite telecom equipment would be located on a pole or lattice structure up to 19 feet high.

2.5.5 Construction Activities

Construction Schedule and Phasing

Construction is anticipated to commence during the 2nd quarter of 2013, and continue through the 3rd quarter of 2015, in three phases. Commercial operation would also be phased and the first phase of operation would commence during the 2nd quarter of 2014, with commercial operation of the final phase commencing during the 3rd quarter of 2015. The construction schedule would be as follows:

- Phase 1 Construction: April 2013 to July 2013 (3 months)
- Phase 2 Construction: September 2013 to November 2014 (14 months)
- Phase 3 Construction: November 2014 to May 2015 (6 months)

Construction of Phase 1 would include pre-construction surveys, exclusion fencing around a 10-acre area in the northwest corner of the DHSP site, desert tortoise exclusion (if tortoise are present), clearing and construction of a laydown yard, parking area, and pad mounts for transformers.

Construction of Phase 2 would include site fencing, installation of temporary power, site grading and preparation over a 1,043-acre area, construction of the O&M building (if necessary) and on-site roads, construction of the on-site wells, construction of the project substation and switch-yard, and assembly and installation of panel blocks and wiring for 137 MW of solar power.

Construction of Phase 3 would include site grading and preparation over a 155-acre area, assembly and installation of panel blocks and wiring for 13 MW of solar power. Panel blocks would not be installed within the FERC exclusion area crossing the southern parcel (see Figure 2-3a in Appendix A for more detail).

Construction would generally occur 2 hours before sunrise and 2 hours after sunset, Monday through Friday. Additional hours may be necessary to correct Desert Harvest Solar schedule deficiencies or to complete critical construction activities. For instance, during hot weather, it may be necessary to start work earlier to avoid pouring concrete during high ambient temperatures. During the startup phase of the project, some activities may be performed over the weekend.

Site Access and Circulation

Access to the northern portion of the project site would be from the existing Kaiser Mine Road along the western boundary of the project area. This road is off of Rice Road, which has an on-ramp/off-ramp to Interstate 10 at Desert Center. A lane for truck turn-off will be required on Kaiser Mine road, and new roads would be required within the project area. Components would be delivered by this road, on a schedule to be determined by the EPC contractor. Access to the southern portion of the project site would be from Kaiser Mine Road as well. Please see Figures 2-3a and 2-3b in Appendix A for more details on the access roads, including access across the FERC exclusion area.

Worker access would be controlled through a locked entrance gate in the west corner of the northern project area.

As noted above, access within the project area would be provided by 14- to 26-foot-wide unpaved, ungraveled roads running east-west, and 14-foot-wide graveled roads running north-south that would be cleared, graded, and covered with aggregate and compacted to 90 percent to allow fire and maintenance vehicle access. Gravel and/or aggregate would be sifted from on-site soil or obtained from a BLM-approved commercial quarry within 6 miles of the project site.

Construction Workforce

The on-site workforce would consist of laborers, craftsmen, supervisory personnel, supply personnel, and construction management personnel. The maximum number of on-site personnel is

250 individuals at any one time. An average workforce of 100 is anticipated. The construction workforce would largely be recruited from within Riverside and San Bernardino Counties from Applicant-hosted job fairs.

Typical construction work schedules are expected to be 8 hours per day Monday through Friday. Typically, the work day would consist of one shift beginning as early as 7:00 a.m. and ending as late as 7:00 p.m. The work schedule may be modified throughout the year to account for the changing weather conditions (e.g., starting the work day earlier in summer months to avoid work during the hottest part of the day for health and safety reasons.)

Construction Waste Management

Portable bathrooms would be provided on-site during construction and would be emptied in an approved off-site facility; domestic wastewater generated during construction would not be disposed of on-site.

Construction Vehicles and Equipment

During construction, the tonnage delivered would be on the order of 15,000 tons of equipment and materials. Table 2-2 provides an estimate of the total truck deliveries, and Table 2-3 lists the number and types of construction vehicles required. In addition to what is shown in Tables 2-3 and 2-4, the peak number of construction-related automobile trips would be up to 446 one-way trips per day[3] and the average annual construction-related automobile trips is estimated to be 178 one-way trips per day (89 round trips).

Table 2-2. Estimated Truck Deliveries

Item	Truck Deliveries	Vehicle Type	Axles	Deliveries per Day	Duration (months)
Modules	2488	53' Flatbed	5	10-12	17
Foundation posts	435	48' Flatbed	5	3-4	15
Racking	550	48' Flatbed	5	3-4	15
Cable	57	53' Flatbed	5	0-1	10
Inverters	104	48' Flatbed	5	0-1	17
Transformer	1	53' Flatbed	5	0-1	1
Concrete	165	Concrete mixer	3	3-5	9
BLM-approved road base	500	Dump truck	3	10-12	8
Trash (haul off)	60	40-YD roll-off	3	1-2	26
Fencing	25	48' Flatbed	5	0-2	4
Electrical equipment	40	48' Flatbed	5	0-2	26

[3] Assumes 30 percent carpool rate.

Table 2-3. Construction Vehicles Required

Item	Units	Duration of Use (hrs/day)	Duration (months)	Purpose
Water truck	3	8	25	Dust control
Front end loader	3	8	25	Material movement
Scrapers	5	8	14	Grading
Bulldozers	2	8	14	Grading
Graders	5	8	14	Grading
Hydraulic Ram	10	8	20	Foundation installation
Forklifts	8	8	26	Material staging
Backhoes	8	8	20	Excavation
Crane	2	10-12	17	Inverter placement
Tractor - with trailer	6	8	25	Material staging
Pickup truck	30	10-12	26	Transportation
ATV	40	10-12	26	Transportation
Pile driver	10	8	20	Post installation
Trencher	2	8	20	Underground work (AC/DC/Fiber trenching)
Small sheepsfoot roller	4	6	20	Compaction
Power screener	3	6	14	Soil processing
Cable plow	1	8	20	Underground cable installation

Site Preparation, Surveying, and Staking

Site preparation would begin shortly after final permitting is complete. Final surveying, to accommodate existing ROW grants and setback requirements for Kaiser Road, and the gas ROW along the eastern portion of the road, would precede any site work. Surveying would be completed by a California licensed land surveyor. The surveyor would stake the edges of the project area prior to erection of the security fencing.

Security fencing would be put in place in sequence with project phasing.

Vegetation Removal and Treatment

Once fencing is erected, site preparation would consist of removing vegetation within the project area by scarification where necessary; for example, along the access roads. An estimated 10 percent of the entire project area would be scarified to remove vegetation on all the access roads between the 1.44 MW rows of solar panels. In addition, any vegetation over 18 inches would be removed to avoid interaction with the solar panels. Annuals and smaller perennials would remain.

Preparation would likely proceed by section, so that only the portion of the project area where panels would be laid out over a period of six months would be scarified at any one time.

Key considerations for vegetation treatment of the site would include:

- Soil disturbance in support of construction would increase the possibility of introduction of invasive species. Regular monitoring and weed management would be required during construction. Ongoing maintenance in the solar field may include treatment of noxious weeds by targeted spraying with common formulations of the herbicide glyphosate, which is a herbicide approved for use on BLM lands in California in the Record of Decision on the 2007 *Final Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement* (BLM 2007).

- Where temporary access is needed to install facilities, such as along the perimeter fencing, no removal of existing vegetation or grading would occur. Instead, equipment would drive over or around existing desert scrub vegetation without direct removal. Crushed vegetation is much more likely to show a rapid recovery than where vegetation is removed and reseeded, or where soils are disturbed. The Applicant is not expecting that final plans would require any disturbance outside the final perimeter fencing and internal engineered berms.
- Revegetation with native species would be implemented where feasible in areas of temporary disturbance.

The Applicant would implement an Integrated Weed Management Plan (IWMP) that describes non-native, noxious, or invasive weed species that occur or are likely to occur at the site and prescribes management actions to monitor and eradicate specified species. As described in Section 1.9.1 (Relationship of the Proposed Action to BLM Policies, Plans, and Programs), the IWMP and the use of herbicides for the proposed project tiers off of the BLM's 2007 *Final Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement* (Herbicide PFEIS) and Record of Decision (ROD). The Draft IWMP is included in Appendix C.10 of this EIS and specifies that weed management would be consistent with approved herbicides, protocols, and standard operating procedures from the Herbicide PFEIS. The Draft IWMP is presented in Appendix C-10.

The IWMP would include weeding, annual pruning, and soil monitoring if necessary. Weeding would occur frequently during the initial growth period to ensure that invasive plants do not mature and set seed. Weeding activities would follow the approved WMP. Once the native plant species are established, weeding frequency would likely be able to drop to less frequent levels.

Vegetation would be allowed to re-grow within the solar panel field. It would not be allowed to grow too high (above 18 inches) underneath the panels, or it may grow into electrical connections and create a fire hazard, or disrupt the panel's performance. However, this is relatively unlikely given the shading the panels would be providing on the soil. At a minimum, the access roads in the photovoltaic field would be maintained free from significant vegetation through the use of targeted herbicide spraying, occasional scarifying, or weeding to reduce fire hazard and allow access to the panel arrays.

Solar Array Assembly and Construction

The panel field would be constructed as follows. After the site is prepared, and graded to the limited extent required, the panel field would be laid out by installing the vertical H-pile galvanized steel beams directly into the ground by means of a small pile-driver. A preliminary walk-through by civil engineers suggests that this foundation would be sufficient to meet geotechnical requirements for wind stability. Soil tests would be required to validate the preliminary engineering. If tests conclude that further foundations are required, then the vertical H-pile galvanized steel beams would be attached to concrete ballasts. Once the foundations are secure, trenching would be dug along the perimeter of the 1.44 MW units, to tie the inverter blocks together, and the electrical conduit and wires would be laid down. Next, the framing would be bolted to the vertical support beams. Once framing is complete, panels would be delivered onsite and installed on the frames. Finally, the pre-poured concrete inverter pads would be delivered and laid down. Lastly, the inverters would be secured to the pads, and the electrical wiring would be completed.

The laydown area is shown Figure 2-3 in Appendix A as Phase 1. In general, material delivery for the solar field would maintain a constant flow, and panels and framing structures would be delivered throughout the solar field adjacent to the 1.44 MW subunit locations. These areas would be subsumed by the solar field as it is built out. Construction would proceed in an assembly-line fashion as each task is completed throughout the solar field.

During construction, electric power for construction activities would be derived from the distribution lines that run along the southern side of the project site, or by mobile generators. Up to five mobile generators would be used that would be located at the laydown area (at the northwest corner of the site). Each generator would produce 60 dB(A) of noise at 23 feet.

Gravel, Aggregate, and Concrete Requirements and Sources

Gravel would be required for the north-south access roads (not for the less often used east-west routes) within the project area and would be sifted from on-site soil or trucked to the site from a BLM-approved commercial mine located 6 miles from the project site. Road aggregate required for the on-site access roads would amount to 17,500 cubic yards.

Concrete would be required for the inverter pads and the switchyard. Concrete for the inverter pads and vertical H-pile supports, if needed, would be pre-poured and transported to the site by truck. A temporary, two-acre concrete batch plant would be installed in the construction laydown area. The Applicant would purchase the concrete batch plant source materials from a commercial source approximately 6 miles from the project site.

Construction Water Requirements and Sources

During the 24-month construction period, an estimated 400 to 500 acre-feet of water per year (for a total of 800 to 1000 acre-feet) would be needed for such uses as soil compaction, dust control, and sanitary needs for construction workers, depending on the configuration selected. The majority of the construction water use would occur during site grading operations. The daily water demand during construction of the project is estimated to range from a low of 125,000 gallons per day (gpd) to a peak of an estimated 600,000 gpd. The project's maximum well extraction rate over any 24-hour period is not expected to exceed 880 gallons per minute. Drinking water would be provided from an off-site commercial source during construction. Water requirements for the project are shown in Table 2-4.

Table 2-4. Water Requirements of the Solar Project

Water Consumption Requirements	Approximate Consumption during Construction	Approximate Consumption during Operation
Daily (gallons per day)	200,000–500,000	N/A
Annual (acre-feet/year)	400–500	26.02-39.02

Temporary construction ponds would be used for water storage at various locations around the site at locations depicted on Figure 2-3 in Appendix A. Use of temporary ponds rather than relying entirely on stand tanks and water trucks would reduce the amount of vehicle travel around the site by water trucks (and associated exhaust and dust), reduce the rate of groundwater extraction during construction, and also improve capability to respond quickly and effectively to mitigate fugitive dust emissions caused by unexpected high wind events.

A total of three temporary water storage ponds are planned around the project construction site. It is anticipated that each pond would occupy an estimated three-quarters of an acre and would hold an estimated 21.5 million gallons. The ponds would be connected to supply wells and would involve 6-inch HDPE pipe runs along on-site access roads or the solar facility site perimeter from the wells to the ponds. Two or three ponds would be operating at any one time; one pond would be open for every roughly 400 acres that are actively undergoing site preparation activities at any one time. The temporary ponds would be an estimated 6 to 8 feet deep and would be fenced and lined for safety. The temporary ponds would be covered with netting to deter ravens and would be designed, constructed, and operated to comply with all applicable regulatory requirements with respect to design, operation and maintenance, protection of migratory waterfowl, and raven management. To minimize earth work, most of the ponds would be co-located with planned retention basins that would be used during project operation to contain storm water runoff. Storm water pollution prevention BMP controls would be incorporated with the retention basins.

The ponds would be filled by pumps running 24 hours per day at up to 600 gallons per minute. A float valve in each pond would control overflow. Water would be pumped from the pond into large temporary storage tanks (stand tanks) using hurricane pumps. Water would be transferred directly to trucks from the stand tanks, as needed for dust control and compaction during construction.

2.5.6 Operations and Maintenance Activities

Maintenance Activities

Vegetation treatment would be required to keep the site free of noxious weeds. At a minimum, the access roads in the photovoltaic field would be maintained free of larger plants through the use of targeted spraying, occasional scarifying, or weeding to reduce fire hazard, and allow access to the panel arrays.

Roads would be maintained to minimize fugitive dust and prevent erosion from rain events. Additional gravel or surface treatments such as “seament” on the dirt access roads may be required.

Other maintenance that would be performed in conjunction with the routine maintenance includes but is not limited to:

- Torque electrical fittings
- Clean switch gear
- Calibrate protective relays
- Fire protection system test and annual certification
- Fuse swapping, testing ground fault detection and power quality

Operations Workforce and Equipment

Staffing

Management personnel would provide technical oversight/guidance in four critical areas: overall plant management, plant operations and maintenance, and human resources, accounting, and administration. The project would employ up to 8 full-time staff during operations.

No replacement/rotations of plant personnel are projected during this period. If the need for such a rotation arises, necessary arrangements would be coordinated with the owner on a case-by-case basis.

Between 1 and 3 security personnel would be located on the project site. If the O&M building is located on-site, security personnel would be on-site 24 hours per day. If the O&M building is offsite, security personnel would be located at the operations and maintenance facility during evening hours and early mornings, likely between 5:00 p.m. and 7:00 a.m., depending on the season. The project site would be monitored by remote cameras, motion detectors and perimeter security alarms. In the event that any of these methods detected an event at the project site, security personnel would be deployed for an onsite inspection.

Staff Training and Safety

The operator would pursue an ongoing training program in accordance with the Applicant's Training Manual. The main goal of this manual is to ensure that the O&M staff remains fully competent in the safe, reliable, and efficient operation, maintenance, and administration of the plant.

Operations Equipment

Facilities would be maintained by 4 diesel engine pickup trucks. These would be used for accessing the site and delivering equipment and crews for maintenance activities. Maintenance vehicles would travel to the site daily from an off-site O&M building (within 10 miles of the site) or an optional on-site building. Panel washing would occur up to 3 times annually during operations, and water would be trucked to the site in up to 1,173 water truck trips annually from a nearby commercial location (within 10 miles of the solar facility site).

Operational Water Requirements and Sources

During operation, water would be required for solar panel watering two to three times per year. If off-site wells are used, water would be trucked to the project site from up to 10 miles away in up to 1,200 5,000- to 10,000-gallon water trucks annually during project operations for the purpose of panel washing. Panel wash water would be purified using the on-site reverse osmosis system, which is described in detail in Section 2.4.4. A permanent, above-ground 5,000 gallon water storage tank would be used for O&M tasks and facilities, including on-site fire-fighting. The water tank would be up to 13 feet (159 inches) in height and would be located on a concrete slab up to 11 feet (140 inches) in diameter. The total water used would be between 18 and 27 acre-feet per year.

Domestic wastewater would be treated and disposed at the site using a septic disposal system consisting of septic tanks and leach field permitted by Riverside County Health District. The specifications for the septic system would be determined by engineering code and County permit requirements. Water requirements of the solar project are shown in Table 2-4.

Aviation Lighting

The Applicant anticipates no aviation restrictions for this photovoltaic plant because all structures would be lower than the 200-foot height standard that triggers Federal Aviation Administration Part 77 Obstruction Evaluation Consultation.

2.5.7 Decommissioning Activities

Site Closure and Reclamation Activities

The minimum expected operational lifetime of Desert Harvest Solar is 30 years; however, depending on economic or other circumstances, the real life of the project could be longer or shorter. The project's lifetime could be 50 years or more with equipment replacement and repowering.

In case of a temporary closure of the facilities, the BLM and any other responsible agencies would be notified. If temporary closure involves the threat or actual release of hazardous substances, procedures would be implemented from the Hazardous Materials Business Plan, as developed for the project. Procedures would include but not be limited to the following:

- Practices to control any release of hazardous materials
- Applicable notifications of responsible agencies and the public
- Emergency response procedures

When permanent closure is appropriate, a decommissioning plan would be developed and submitted to the BLM for review and approval. Procedures would be designed to ensure public health and safety, environmental protection and compliance with all applicable laws, ordinances, regulations, and standards. Closure may range from short-duration closure to complete removal of equipment and restoration of the land to BLM-approved specifications. The procedures for decommissioning are designed to ensure public health and safety, environmental protection, and compliance with applicable regulations. It is assumed that decommissioning would begin 30 to 50 years after commercial operation date of the solar plant.

Decommissioning would generally include the following goals:

- Provide the BLM with a detailed Decommissioning Plan. BLM has the authority to require that the project area is restored to its natural state, including removing all above and below ground structures, foundations, cement, and any other items.
- Remove above and below ground structures unless converted to other BLM-approved uses
- Restore the lines and grades in the disturbed area to match the natural gradients of the site
- Re-establish native vegetation in the disturbed areas
- Comply with applicable laws, ordinances, regulations, and standards and local/regional plans
- Secure funding for decommissioning and restoration

The proposed strategy to achieve the above goals could include the following:

- Analyze alternatives other than full restoration of the site (for instance, removal of old facilities and upgrading to newer solar technology)
- Use industry standard demolition means and methods to decrease personnel and environmental safety exposures by minimizing time and keeping personnel from close proximity to actual demolition activities to the extent practical
- Plan components of decommissioning to ensure personnel and environmental safety are maintained while efficiently completing the work

- Provide for recycling the components of the plant: metal, panels, concrete; and proper disposal of all other materials
- Remove all residual materials and chemicals from the site prior to demolition for reuse at other facilities or disposal at licensed facilities
- Demolition of below-ground facilities to a depth required for restoration of the native habitat
- Soils clean-up, if needed, particularly at locations where hazardous materials were used or stored to ensure that clean closure is achieved
- Restore the lines and grades in the disturbed area to match the natural gradients of the site and re-establish native vegetation in the disturbed areas

The first stage of dismantling the site would consist of removal and demolition of aboveground structures. The second stage would consist of dismantling and removing concrete structures so that no concrete remains within 3 feet of final grade, or as approved in the BLM approved Decommissioning Plan, and as appropriate. The third stage would involve removal of underground utilities within 3 feet of final grade, or as approved in the BLM approved Decommissioning Plan. The fourth stage would consist of excavation and removal of soils.

2.5.8 Design Features, BMPs, and Other Conditions Included in the Proposed Project

Table 2-5 describes those design features of the project that, when implemented as part of project construction or operation, would reduce or eliminate potential significant impacts of the project. Proposed project plans for Desert Harvest will be adapted based on project field studies.

Table 2-5. Applicant Measures

Air Resources	
AQ-1. Dust Control Plan	Applicant will develop and implement a dust control plan that includes the use of dust palliatives to ensure compliance with SCAQMD Rule 403. The dust control plan will focus on reducing fugitive dust from construction activities
AQ-2. Phased construction activity	Construction activity will be phased across the solar facility site in a manner that would minimize the area disturbed on any single day.
AQ-3. Minimize emissions from grading	Cut and fill quantities will be balanced across the solar facility site to minimize emissions from grading and to avoid the need to import fill materials or to remove excess spoil.
AQ-4. Transportation Plan	Applicant would require bidders for the construction contract to submit a transportation plan describing how workers would travel to the project site and how to encourage carpooling and alternative forms of transportation
Vegetation	
BIO-1. Habitat Compensation Plan	A Habitat Compensation Plan will be implemented by the Applicant to compensate for the loss of creosote desert scrub, desert dry wash woodland, and jurisdictional resources. Compensation will be accomplished by acquisition of mitigation land or conservation easements or by providing funding for specific land acquisition, endowment, restoration, and management actions under one of several programs, such as the mitigation program created by California Assembly Bill AB 13 in September, 2011. The Habitat Compensation Plan will be reviewed and approved by the BLM, USFWS, and CDFG. The precise details of the mitigation, including mitigation ratios, will be established in the BLM ROW grant, USFWS Biological Opinion, and any CDFG 2081 Incidental Take Permit or CDFG 2080.1 Consistency Determination.

Table 2-5. Applicant Measures

BIO-2. Integrated Weed Management Plan	A Draft Integrated Weed Management Plan (IWMP) will be prepared pursuant to BLM's Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States (BLM 2007) and the National Invasive Species Management Plan (The National Invasive Species Council 2008), and will be implemented by the Applicant to reduce the potential for the introduction of invasive species during construction, operation and maintenance, and decommissioning of the project.
BIO-3. Preconstruction Surveys	Preconstruction Surveys for Special Status Plant Species and Cacti. Before construction, the Applicant will stake and flag the construction area boundaries, including the construction areas for the solar facility site, and gen-tie line; construction laydown, parking, and work areas; and the boundaries of all temporary and permanent access roads. A BLM-approved biologist will then survey all areas of proposed ground disturbance for special status plant species and cacti during the appropriate blooming period for those species having the potential to occur in the construction areas. All special status plant species and cacti observed will be flagged for transplantation. All cacti observed will be flagged for transplantation and special status plant species observed will be flagged for salvage.
BIO-4. Worker Environmental Awareness Program	Worker Environmental Awareness Program (WEAP). The Applicant will implement a WEAP to educate on-site workers about sensitive environmental issues associated with the project. The program will be administered to all on-site personnel including surveyors, construction engineers, employees, contractors, contractor's employees, supervisors, inspectors, subcontractors, and delivery personnel. The program will be implemented during site mobilization, ground disturbance, grading, construction, operation, and closure.
BIO-5. Vegetation Resources Management Plan	The Applicant will prepare and implement a Vegetation Resources Management Plan that contains the following components: • A Vegetation Salvage Plan which discusses the methods that will be used to transplant cacti present within the project locations following BLM's standard operating procedures, as well as methods that will be used to transplant special status plant species that occur in the project locations if feasible. • A Restoration Plan which discusses the methods that will be used to restore creosote bush scrub and desert dry wash woodland habitat that is temporarily disturbed by construction activities. • The Vegetation Salvage Plan and Restoration Plan will specify success criteria and performance standards. BLM will be responsible for reviewing and approving the plan and for ensuring that the Applicant implements the plan including maintenance and monitoring required in the plan.
Wildlife	
BIO-6. Vegetation Measures	Implementation of Applicant Vegetation Measures would reduce impacts on wildlife as well. Where there is a conflict between provisions of the Mitigation Measures recommended for wildlife impacts and the following Applicant Measures, the Mitigation Measures take precedence.
BIO-7. Desert Tortoise Translocation Plan	A Draft Desert Tortoise Translocation Plan will be prepared for the project and will be implemented by the Applicant to ensure that construction monitoring will be conducted by a BLM-, USFWS-, and CDFG-approved biologists during all construction activities and that any desert tortoise found with the construction zone will be translocated to a suitable location outside of the project footprint. The final plan will conform to the 2010 USFWS desert tortoise relocation guidelines entitled Translocation of Desert Tortoise (Mojave Population) From Project Sites: Plan Development Guidance. Unpublished Report dated August 2010.
BIO-8. Bird and Bat Conservation Strategy and Contribution to Raven Management Program	The Applicant will contribute to the U.S. Fish & Wildlife Service (USFWS) Regional Raven Management Program by making a one-time payment of $105 per acre of project disturbance to the national Fish and Wildlife Federation Renewable Energy Action Team raven control account. A Draft Bird and Bat Conservation Strategy will be prepared and will be implemented by the Applicant to specify necessary actions to be taken to protect nesting bird and bat species, including burrowing owls, nesting birds, and roosting bats. The draft plan will be reviewed and approved by BLM. The final plan will conform to the USFWS Bird and Bat Conservation Strategy guidelines.
BIO-9. Water Storage Pond Design	Construction Water Storage Pond Design. The temporary construction water ponds will be designed, constructed, and operated in compliance with all applicable regulatory requirements with respect to design, operation, and maintenance, protection of migratory waterfowl, and raven management.
Climate Change	
CC-1. Reduce GHG Emissions	The third and fourth Applicant Measures proposed in the Air Resources section would help reduce greenhouse gas emissions in addition to reducing criteria pollutant emissions.

Table 2-5. Applicant Measures

Cultural Resources	
CULT-1. Monitoring and Mitigation Plan	A cultural resources monitoring and mitigation plan will be prepared for the project. The plan will include a description of areas to be monitored during construction, a discovery plan that will address unanticipated cultural resources, and provisions for the education of construction workers. Responsible parties for mitigation measures will be identified.
Geology and Soil Resources	
GEO-1. Design Plan	Project structures shall be built in accordance with the design-basis recommendations in the project-specific geotechnical investigation report. Structure designs must meet the requirements of all applicable federal, state, and county permits and building codes.
GEO-2. Design Features	The Applicant will implement the following design features to reduce impacts from wind and water erosion to soils: ■ Obtain coverage under the NPDES General Permit for Storm Water Discharges Associated with Construction Activity (General Permit) Water Quality Order 2009-0009 DWQ; ■ Use nonhazardous dust suppressants approved by the BLM and water on an as-needed basis to suppress wind-blown dust generated at the site during construction. Dust palliatives also would be applied between rows of solar panels for dust suppression during operation; ■ Implement erosion control measures during construction; and ■ Use silt fences for erosion control along neighboring properties and along the main drainage adjacent to the solar facility site.
Lands and Realty	
LU-1. Notification	Property owners within 300 feet of the project will be notified of all major project construction milestones, such as start of project construction. Said property owners will be provided with a detailed construction schedule at least 30 days before construction so that they are informed as to the time and location of disturbance. Updates will be provided as necessary.
Noise & Vibration	
N-1. Construction schedule	Most construction activity will be limited to daytime hours consistent with Riverside County noise ordinance limitations. Certain electrical connection activities at the solar project site would occur at night for safety reasons, but would not require any heavy equipment operations.
Public Health & Safety / Hazardous Materials	
HAZ-1. Spill containment and clean-up kits	Appropriate spill containment and clean-up kits will be kept on site during construction and maintained during the operation of the solar facility and gen-tie line.
HAZ-2. Hazardous Materials Management Plan.	In accordance with the Emergency Planning & Community Right to Know Act, the Applicant will supply the local emergency response agencies with a Hazardous Materials Management Plan and an associated emergency response plan and inventory specific to the site. The Applicant will prepare the plan for approval by the BLM and review and comment by the County of Riverside. The Applicant will be responsible for implementing the approved plan.
HAZ-3. BMPs for hazardous materials	During construction of the solar facility and gen-tie line, BMPs for handling, storing, and disposing of hazardous materials and waste will be followed.
HAZ-4. SPCC Plan	A Spill Prevention, Control, and Countermeasure Plan (SPCC) will be developed and implemented that would identify primary and secondary containment for oil products stored on site as well as training in spill management in the event of an unexpected release. The Applicant will prepare the plan for approval by the BLM. The Applicant will be responsible for implementing the approved plan.
HAZ-5. Env. Health and Safety Plan	The Applicant will develop an Environmental Health and Safety Plan for the construction and operation of the project to ensure it includes all activities and compliance with all local, state and federal regulatory requirements. Illness and Injury Prevention Programs will be developed for construction and operation. The Applicant will prepare the plan for approval by the BLM. The Applicant will be responsible for implementing the approved plan.
HAZ-6. Emergency Response and Inventory Plan	The Applicant will provide the County of Riverside with a project-specific Emergency Response and Inventory Plan before construction begins. The Applicant will prepare the plan for approval by the BLM and review and comment by the County of Riverside. The Applicant will be responsible for implementing the approved plan.

Table 2-5. Applicant Measures

HAZ-7. Fire Protection and other requirements	Project facilities will be designed, constructed, and operated in accordance with applicable fire protection and other environmental, health and safety requirements. In compliance with County of Riverside requirements, a project-specific fire prevention plan for both construction and operation of the solar facility and gen-tie line will be completed prior to initiation of construction. The fire protection plan will be approved by the BLM and provided to Riverside County for review and comment.
HAZ-8. Fire Prevention Plan	A project-specific fire prevention plan will be in place during construction, operation and decommissioning of the project. This plan will comply with applicable County of Riverside regulations and would be coordinated with the BLM Fire Management Officer and the local Fire Department in the Chuckwalla Valley at Tamarisk Park.
HAZ-9. Emergency Response Plan	An emergency response plan and site security plan will be completed for the project facilities by qualified professionals. These plans will be developed in accordance with the BLM requirements.
HAZ-10. Decommissioning Plan	When permanent closure is appropriate, a decommissioning plan would be developed and submitted to the BLM for review and approval. The following strategy would be taken: ■ Analyze alternatives other than full restoration of the site (for instance, removal of old facilities and upgrading to newer solar technology) ■ Use industry standard demolition means and methods to decrease personnel and environmental safety exposures by minimizing time and keeping personnel from close proximity to actual demolition activities to the extent practical ■ Plan components of decommissioning to ensure personnel and environmental safety are maintained while efficiently completing the work ■ Provide for recycling the components of the plant: metal, panels, concrete; and proper disposal of all other materials ■ Remove all residual materials and chemicals from the site prior to demolition for reuse at other facilities or disposal at licensed facilities ■ Demolition of below-ground facilities to a depth required for restoration of the native habitat ■ Soils clean-up, if needed, particularly at locations where hazardous materials were used or stored to ensure that clean closure is achieved ■ Restore the lines and grades in the disturbed area to match the natural gradients of the site and re-establish native vegetation in the disturbed areas
Socioeconomic and Environmental Justice	
S-1. Notification	The public will be notified of project activities and scheduling to inform the public of projected impacts on the surrounding area. This notification will provide the public with the opportunity to plan their personal and business activities appropriately.
S-2. Minimize visual impacts of gen-tie	Project Applicant will align gen-tie lines along existing linear features (such as Kaiser Road) to minimize the social effects of potential visual impacts.
Transportation and Public Access	
TR-1. Construction Traffic Control Plan	Project Applicant will prepare a Construction Traffic Control Plan in conjunction with Riverside County or Caltrans in accordance with Caltrans Manual on Uniform Traffic Control Devices and the California Joint Utility Traffic Control Manual (2010).
TR-2. Document road conditions	Project Applicant will document road conditions at the beginning and end of project construction and decommissioning and contribute fair share cost for pavement maintenance and other needed repairs.
TR-3. Share project information with airport owners	Project Applicant will share project information with the airport owners if a transmission line alternative that runs near the former Desert Center Airport's runway is selected to assure that no special precautions are needed.
TR-4. Coordinate with DoD	BLM will coordinate with the DoD R-2508 Complex Sustainability Office, Region IX, based in San Diego, California, and with local regional military installations regarding low-level flight operations relative to the project to assure that no special precautions are needed.

Table 2-5. Applicant Measures

Water Resources	
WR-1. Manage hazardous materials and use SPCC Plan	The Applicant or its agents will: ■ Train construction staff in the management of hazardous materials and use of spill control and cleanup equipment; ■ Have a clear chain of command within the organizational structure with responsibility for implementing, monitoring, and correcting BMPs; ■ Cover and contain hazardous materials so that they are not in contact with precipitation or runoff; ■ Store hazardous materials in one or more central areas, and institute rules requiring all hazardous materials to be secured at the end of the day; ■ Maintain good inventory records; store hazardous liquids and dispensing equipment in secondary containment; ■ Maintain adequate quantities of spill containment and response equipment at readily accessible points throughout the site; ■ Identify the worst case and most likely spill scenarios, and provide spill response equipment adequate to respond to these scenarios; ■ Use chemicals presenting the least environmental hazard wherever possible; ■ Store the smallest quantities of hazardous materials possible on the site; ■ Maintain site security to reduce vandalism; ■ Require all contractors to abide by the program BMPs and to identify any hazardous materials and specific BMPs pertaining to their trade or activity. ■ The SPCC Plan for the site would address storage of mineral oil contained in transformers. A SPCC Plan is required when 10,000 gallons or more of mineral oil in electrical equipment is contained on site, or when 1,320 gallons of petroleum is stored on the site, although an SPCC Plan can be voluntarily implemented for lesser quantities. The SPCC Plan would address methods and procedures for managing these products, lighting, security, containment requirements, training requirements, staff responsibilities for inspecting storage and dispensing equipment; and equipment and procedures for responding to a spill or release of stored petroleum products. ■ Riprap increases surface roughness and slows runoff velocities, decreasing sediment transport, and increasing flow depth. Riprap would be used in conjunction with decompaction, as riprap would not mitigate flow or volume. ■ Check dams can be constructed to address specific post-development hydraulic characteristics, if needed.

2.6 ALTERNATIVE 5: SOLAR PROJECT EXCLUDING WHMA

Alternative 5 would be constructed within the same project boundaries as Alternative 4, except that it would exclude the 47-acre portion of the site which is within the Palen-Ford Wildlife Habitat Management Area (WHMA), as shown on Figure 2-9, Alternative 5: Solar Project Excluding WHMA, in Appendix A. Alternative 5 would encompass an estimated 1,161 acres and the areas cleared of vegetation would be the same as for Alternative 4 (107 acres). Alternative 5 would be an estimated 145 MW nominal capacity project, which would generate a minimum of 230,000 MWh/y with a net capacity factor of 16 to 18 percent. The area permanently covered by at-grade items would also remain the same as with Alternative 4: 10 acres. Project details are provided in Section 2.5.4 (Structures and Facilities) for Alternative 4. Construction, operation and maintenance, and decommissioning information is provided in Sections 2.5.5 through 2.5.7.

2.7 ALTERNATIVE 6: REDUCED FOOTPRINT SOLAR PROJECT

Alternative 6 would be constructed within the same project boundaries as Alternative 4 except that it would exclude the 155-acre southern parcel of the project and a small (9 acre) portion of the northern parcel that contains a sensitive plant species, crucifixion thorn, as shown on Figure 2-10, Alternative 6: Reduced Footprint Solar Project, in Appendix A. Alternative 6 would not exclude the portion of the site that is within the Palen-Ford WHMA. Alternative 6 would encompass an estimated 1,044 acres and would be an estimated 125 to 135 MW nominal capacity

project, which would generate a minimum of 200,000 MWh/y with a net capacity factor of 16 to 18 percent. The areas cleared of vegetation would be slightly less than for Alternative 4, an estimated 100 acres. The area permanently covered by at-grade items would also be slightly reduced from Alternative 4, less than 10 acres. Project details are provided in Section 2.5.4 (Structures and Facilities) for the Alternative 4. Construction, operation and maintenance, and decommissioning information is provided in Sections 2.5.5 through 2.5.7. Because Alternative 6 would not require use of two separate parcels of land, the alternative would not require an underground electrical connection.

2.8 ALTERNATIVE 7: HIGH-PROFILE REDUCED FOOTPRINT SOLAR PROJECT

Alternative 7 would be constructed within the same project boundaries as Alternative 6, as shown on Figure 2-10, Alternative 6: Reduced Footprint Solar Project, in Appendix A. Alternative 7 would encompass an estimated 1,044 acres and would be an estimated 125–135 MW nominal capacity project, which would generate a minimum of 260,000 MWh/y with a net capacity factor or 22 to 26 percent. Project details are provided in Section 2.5.4 (Structures and Facilities), with the only exception being the overall height of the panels for Alternative 7. Alternative 7 would use high-profile single-axis tracking panels that would have a total height of 15 feet, as shown in Figure 2-11 in Appendix A. Construction, operation and maintenance, and decommissioning information is provided in Sections 2.5.5 through 2.5.7. Because Alternative 7 would not require use of two separate parcels of land, the alternative would not require an underground electrical connection.

2.9 ALTERNATIVE A: NO GEN-TIE

This No Gen-Tie Alternative under NEPA defines the scenario that would exist if the proposed gen-tie line were not constructed and no new or additional plan amendment was issued. If this No Gen-Tie Alternative is selected, the construction and operational impacts of the gen-tie line would not occur. There would be no disturbance of the ground at the tower locations and pull sites, no disturbance of desert vegetation and habitat, and no installation of transmission equipment. This No Gen-Tie Alternative would also eliminate any contributions to cumulative impacts on environmental resources. This No Gen-Tie Alternative is inherent in the solar project no action and no project alternatives (Alternatives 1 through 3), but is introduced to provide a no action baseline for evaluating the potential environmental impacts of the gen-tie action Alternatives B through E.

2.10 ALTERNATIVE B: PROPOSED GEN-TIE LINE (SHARED TOWERS)

As shown in Figure 2-12 in Appendix A, the proposed gen-tie, Alternative B, would utilize transmission infrastructure developed for the Desert Sunlight Solar Farm (DSSF) project by sharing the approved transmission towers for the Desert Sunlight Project. For the EIS, the environmental baseline, also known as the “affected environment” is the existing physical conditions at the time that environmental analysis commences, or September of 2011. As such, the baseline is the existing physical environment in the Chuckwalla Valley, with the approved Desert Sunlight gen-tie that has not yet been constructed. For the purposes of the NEPA analysis, Alternative B would therefore constitute the construction and operation of a transmission line along the approved alignment for the Desert Sunlight Solar Farm’s gen-tie line. Portions of the proposed gen-tie line would not be located in a designated utility corridor (see figure 2-1). However the CDCA Plan would be amended to grant permission to construct outside utility corridor.

2.10.1 Actions or Elements Common to All Action Alternatives

The gen-tie line Alternatives B, C, D, and E would share elements. The transmission support structures would be identical for each alternative. Similarly the types of construction activities would be the same for each activity, although the location and specific engineering requirements would differ based on the existing conditions along the ROW. Details regarding the tower selections, construction operation, and decommissioning activities is provided in Section 2.10, Alternative B: Proposed Gen-Tie (Shared Towers) and are applicable for Alternatives C, D, and E. Any differences in construction, operation, and decommissioning activities for the alternatives have been identified in the sections that follow.

Applicant Measures (AM) are considered design features and performance commitments by the Applicant, and are incorporated into the project design. All AMs for the proposed gen-tie line (see Table 2-5) would be required for Alternatives B, C, D, and E.

2.10.2 Overview

Alternative B would involve construction, operation, and eventual decommissioning of a 220 kilovolt (kV) transmission generation tie (gen-tie) line, which would begin on the west side of the solar project site, turn south along the west side of Kaiser Road, turn east just north of Desert Center, and run south across I-10 to the Red Bluff Substation. Along Kaiser Road, the center of the 160-foot transmission line ROW would be located an estimated 120 to 130 feet from the centerline of the paved roadbed, within the county road ROW on BLM land. One mile south of Oasis Road, the line would turn east, running along the north side of the section lines dividing BLM-managed land from private land. After 0.7 miles, the line would turn southeast for 0.7 miles, due east for 3.5 miles, then south for 0.8 miles to the Red Bluff Substation. Alternative B would align parallel and to the south of an existing BLM open route, along BLM-administered land. The same access road would be used for maintenance of both the Desert Harvest and Desert Sunlight gen-tie lines and the gen-tie lines would be maintained concurrently using the same maintenance service provider.

Of the 12.1-mile ROW, 11.4 miles would be on BLM land (with 6 of these miles within a federally designated utility corridor), 0.6 miles would be on land owned in fee by MWD and 0.5 miles would be on land owned in fee by Riverside County. The Applicant would enter into a land license agreement, lease, or permanent easement with MWD for the portions on land owned in fee by MWD, and would rely on this EIS to satisfy the CEQA obligations of MWD. Riverside County would issue an Encroachment Permit for the portions on land owned in fee by the County and for access into the County road ROW, in addition to issuing a Public Use Permit for the MWD- and privately owned lands.

The 160-foot-wide corridor and additional fan-shaped areas at corners used for wire stringing for Alternative B would encompass 256 acres. The total length of Alternative B would be 12.1 miles. The elevation of the Alternative B alignment varies from 690 to 833 feet above mean sea level. An estimated 73 transmission structures would be required for this alternative, including 65 tangents and 8 dead-ends. Five splicing locations and 20 guard structures would be used during construction. Permanent access roads would be constructed in order to provide access for maintenance of the gen-tie, as needed. Table 2-6 provides a list of major gen-tie components, along with the acreage required for each component.

Table 2-6. Alternative B – Description of Components

Project Facility or Component	Dimensions	Percent of Gen-Tie Corridor
Gen-tie line corridor	Width: 160 feet plus additional fan-shaped areas at corners Length: 12.1 miles ROW Area: up to 256 acres	100
Permanent disturbance (within corridor)	92 acres	35.9
Total transmission structure footprint	2,743 square feet (0.06 acres)	< 0.1
Individual transmission structure footprint	Tangent structure: 28.3 square feet; dead-end: 113.1 square feet	< 0.1
Permanent access roads	Width: 14 feet Length: 7.3 miles 12.4 acres	4.8
Temporary access roads	Width: 14 feet Length: 13.1 miles 22.2 acres	8.7

The Applicant would use steel monopoles for the gen-tie line, the same as the approved Desert Sunlight gen-tie poles; see Figures 2-13a and 2-13b in Appendix A. Poles are expected to be 135 feet tall. Typical spans between poles would be 900 to 1,100 feet. Self-weathering steel would be used for the monopoles, which are intended to blend with the surrounding mountains. The ultimate depth of excavation for poles would depend on detailed geotechnical studies; typical excavation depths for poles of this voltage range from 20 to 30 feet below ground surface.

Based on the project requirements, access, terrain, and limited available geotechnical information, it is expected that direct embedded foundations would be used for tangent structures, and anchor-bolted drilled shaft foundations for angle and dead-end structures. Vibrated casing foundations may also be used, depending on the results of planned further geotechnical investigation.

Telecommunication Equipment

As described for Alternative 4, telecommunication equipment for the solar facility would be located within the on-site substation structure. All fiber optic communication lines necessary to support the on-site telecommunication equipment would be located on the same poles used to support the gen-tie line and would be installed concurrently with the gen-tie line. The communication lines would originate from the on-site project substation and terminate into the SCE communication equipment at the Red Bluff substation.

2.10.3 Construction Activities

Construction of Alternative B would cause both temporary and permanent disturbance within a construction corridor estimated at a width of 160 feet, plus additional fan-shaped areas at each turn in the alignment with radii of 450 feet needed for wire stringing. The permanent disturbance associated with Alternative B would be limited to the foundations of the transmission structures, the footprint of the access road, and two 75-foot by 200-foot areas associated with each fan-shaped stringing area, as described previously.

Preconstruction Surveys

Preconstruction survey work would consist of preconstruction biological clearance surveys, staking structure locations, and flagging the ROW.

Construction Mobilization

Upon notice to proceed, the contractor and construction management would assemble their on-site management and construction staff at a temporary office including phone, fax, and data lines, to be located in, or near the construction area. The contractor and construction subcontractors would have separate field offices.

A laydown yard would be prepared for storage of materials. A material manager would inventory received material. Yard staff would load the transport trailers that would deliver the material to the field. Additional yards may be established to serve as material marshaling facilities, crew assembly locations, and equipment yards. These yards would all be within the project footprint and would not require any additional ground disturbance. Over a 12-month construction period, the gen-tie workforce will average 30 employees and no more than 65 employees at any one point.

A total of 240 material deliveries are expected during the construction period for the gen-tie line. Material deliveries expected during gen-tie line construction are detailed in Table 2-7.

Table 2-7. Material Deliveries During Construction – Gen-Tie Line

Materials Delivered	Truck Deliveries	Truck Type	Duration	Construction Phase
Transmission structures	54	Semi-truck w/flatbed	1.5 months	Mobilization through foundation installation
Conductor, ground wire, optical ground wire	27	Semi-truck w/flatbed	1 month	Mobilization through foundation installation
Concrete	147	Concrete truck	2 months	Foundation installation
Miscellaneous material	10	Semi-truck w/flatbed	1 month	Mobilization through foundation installation

All material deliveries are expected to arrive via I-10 from the west. The equipment expected to be used on-site during gen-tie line construction is detailed in Table 2-8.

Table 2-8. Construction Equipment and Vehicles – Gen-Tie Line

Construction Phase(s)	Equipment	Pieces	Average Hours Used per Day	Purpose
Start of foundation installation through wire installation	5,000-gallon water truck	1	8	General servicing & dust mitigation
Start of foundation installation through wire installation	Service truck	1	8	General servicing & dust mitigation
Start of foundation installation through wire installation	Mechanic truck	2	8	General servicing & dust mitigation
Stake structures and foundation installation	Enclosed material trailers	4	Parked	Material handling & material yard / hauling equipment
Stake structures and foundation installation	40-ton crane	1	4	Material handling & material yard / hauling equipment
Stake structures and foundation installation	4x4 forklifts	2	4	Material handling & material yard / hauling equipment
Stake structures, foundation installation, ROW restoration & cleanup	1-ton crew cab	1	8	Access road / clearing crew / ROW restoration

Table 2-8. Construction Equipment and Vehicles – Gen-Tie Line

Construction Phase(s)	Equipment	Pieces	Average Hours Used per Day	Purpose
Stake structures, foundation installation, ROW restoration & cleanup	¾-ton pickup	2	8	Access road / clearing crew / ROW restoration
Stake structures, foundation installation, ROW restoration & cleanup	Bulldozers	2	8	Access road / clearing crew / ROW restoration
Stake structures, foundation installation, ROW restoration & cleanup	Backhoes	1	4	Access road / clearing crew / ROW restoration
Stake structures, foundation installation, ROW restoration & cleanup	Dump truck	1	4	Access road / clearing crew / ROW restoration
Stake structures, foundation installation, ROW restoration & cleanup	Steel wheel/smooth drum roller	1	6	Access road / clearing crew / ROW restoration
Stake structures, foundation installation, ROW restoration & cleanup	Road grader	1	2	Access road / clearing crew / ROW restoration
Stake structures, foundation installation, ROW restoration & cleanup	10,000-gallon water truck	1	4	Access road / clearing crew / ROW restoration
Foundation installation	1-ton crew cab	4	8	Foundation crews (2)
Foundation installation	¾-ton pickup	3	8	Foundation crews (2)
Foundation installation	Drilling rig	2	8	Foundation crews (2)
Foundation installation	40-ton crane	2	4	Foundation crews (2)
Foundation installation	Forklifts	2	4	Foundation crews (2)
Foundation installation	Towed trailers	2	Parked	Foundation crews (2)
Foundation installation	Water pump	2	1	Foundation crews (2)
Foundation installation	Bulldozers	2	2	Foundation crews (2)
Foundation installation	Front-end wheel loaders	2	6	Foundation crews (2)
Foundation installation	Road tractor w/lowboy trailer	2	2	Foundation crews (2)
Foundation installation	Air compressors	2	2	Foundation crews (2)
Foundation installation	Rock hammer	1	As required	Foundation crews (2)
Foundation installation	Mobile mixer	1	As required	Foundation crews (2)
Foundation installation	Water truck or transportable holding tank w/sufficient capacity to retrieve polymer slurry	1	As required	Foundation crews (2)
Foundation installation	1-ton crew cab	2	8	Setting crew
Foundation installation	¾-ton pickup	1	8	Setting crew
Foundation installation	100-ton crane	1	8	Setting crew
Foundation installation	Forklift	1	6	Setting crew

Gen-Tie Access Road Clearing and Construction

Access roads would be developed to access Alternative B. This would include the permanent roads to the new transmission structure locations and temporary roads for construction. Larger temporary areas around the structures would be necessary during construction to accommodate pole assembly and erection. Clearing and grading would also be needed for wire setup sites. Puller and tensioner sites would require a large, fairly level area to safely accommodate all the equipment required on a wire stringing operation. It is assumed that each location of a tensioner and conductor would occupy an area 100 feet in width by 450 feet in length. These sites may be

constructed in conjunction with the access roads and would be determined once the wire pulls have been planned. A cleared area directly behind each outside angle of dead-end towers is required to maintain the 3:1 wire-stringing ratio. During the construction period, no disturbance beyond the clearing limits would be allowed.

Preventative measures to minimize wind transport of soil would be implemented. Dust abatement would be accomplished through watering.

Foundation Installation

Three types of foundations may be used for construction of Alternative B: drilled shaft anchor-bolted foundations, drilled shaft embedded foundations, and vibrated steel casings. The first two methods involve constructing the foundations on-site. The third method involves using pre-fabricated components for the foundation.

Grounding

The grounding crew would follow behind the erection crew, installing the grounding. Grounding consists of connecting the electrically conductive elements of a transmission line to the earth. This is done in order to create a path of least resistance in case there is an electrical failure or lightning strike along the line. Typical grounding consists of installation of a ground rod and connecting the rod to the structure with a wire.

Framing Structures

Structures would be hauled, assembled, and erected at the designated site in the conventional manner. Structures would be picked up from the material storage yard, hauled to various structure sites or marshaling yards and unloaded. Structures would be assembled in sections on cribbing that would provide for the proper alignment of the steel members. Steel sections would be laid out with hydraulic cranes. The pole base and top sections would be assembled at each structure site.

Setting Structure/Erection

A crane would be used for pole erection to set the pole base sections on the anchor bolts or into the drilled shaft hole, depending on the type of foundation. The crew would have an air compressor and air guns for tightening anchor bolt nuts while maintaining level and plumb.

Guard Structures

Wood pole guard structures would be erected at each road or utility line crossing or at other areas along the ROW where guard structure crossing structures are required. Guard poles would be required at all energized crossings and roads where there is a hazard to people and traffic. Guard pole structures are temporary and would be removed after the conductors have been dead-ended and clipped.

Wire Stringing

Conventional wire stringing is assumed for Alternative B. Wire stringing includes all activities associated with the installation of conductors onto transmission structures and includes the installation of primary conductor, ground wire, and hardware assemblies. A standard wire stringing

plan includes a sequenced program of events starting with determination of the length of wire pulls and wire pull equipment set-up positions. Wire pulling is one of the stringing activities and requires special equipment to pull the wire through wire sheaves and rollers temporarily installed on the transmission structures. Wire splicing is needed to splice together conductor wire (or ground wire) to form longer segments of conductor between pulling locations.

Final inspection and testing would need to be coordinated with functional checkout and commissioning of the substation equipment at each end of the line.

The ROW would be cleared of all construction materials and equipment and the end of construction.

Construction Schedule

Construction of Alternative B would begin in 2013 (depending on Record of Decision (ROD) issuance) and would last for an estimated 12 months. Gen-tie construction would occur concurrently with Desert Sunlight, if feasible.

2.10.4 Operations and Maintenance

DHSP operations and maintenance personnel would perform periodic maintenance of the gen-tie line, and no additional personnel would be required. Operation and maintenance of the proposed project gen-tie line would involve periodic inspection via helicopter or truck. The transmission lines would be maintained on an as-needed basis and would include maintenance of access roads and erosion/drainage control structures.

All telecommunications equipment would be operated and maintained by site personnel. Preventative maintenance of telecommunications infrastructure would typically be scheduled every year to ensure system reliability and performance.

2.10.5 Decommissioning of Facility

Conditions are likely to change over the course of a project lifespan of 30 years or more, and a final Decommissioning Plan would be developed in the future prior to facility closure based on conditions as they occur at that time. The reclamation measures provided in the Decommissioning Plan would be developed with the goal to return the land to its previous, pre-ROW, condition and to ensure protection of the environment and public health and safety and to comply with applicable laws, ordinances, regulations, and standards.

In general, the project's Decommissioning Plan would address:

- BLM's planned future use of the land and the methods of and need to return the land it its pre-ROW condition. This is with the understanding that the gen-tie may be co-located on towers with another ROW holder that may still have an on-going use for the towers and road.
- Proposed decommissioning and reclamation measures for the project and associated facilities;
- Activities necessary for site restoration/re-vegetation;
- Removal of equipment and facilities through reuse or recycling if available, or on-site reuse if there is a need of this use by another entity;
- Procedures for reuse, recycling, or disposal of facility components; collection and disposal of hazardous wastes; and use or disposal of unused chemicals;

- Costs associated with the planned decommissioning activities; and
- Conformance with applicable laws, ordinances, regulations, and standards.

The Decommissioning Plan would be developed in coordination with the BLM and submitted to the BLM for review and approval prior to final closure of the facility.

2.11 ALTERNATIVE C: SEPARATE TRANSMISSION TOWERS WITHIN SAME ROW

Portions of the Alternative C gen-tie line would not be located in a designated utility corridor. Construction of those portions of Alternative C on BLM-administered land would require a Plan Amendment to the CDCA Plan. Figure 2-1 (Project Overview) shows the portions of the gen-tie alternatives, including Alternative C, which would be located on BLM-administered land and outside of a BLM designated utility corridor. A total of 5.4 miles of Alternative C would be located on BLM land outside a designated utility corridor, and an additional 6 miles would require 60 feet of additional ROW width that would be outside of a designated utility corridor.

2.11.1 Overview

As shown in Figure 2-14 in Appendix A, unlike Alternative B, which involves the co-location on the approved transmission towers for the Desert Sunlight Project, Alternative C would parallel the approved DSSF gen-tie line, and would be located on separate towers within a wider ROW. The same number of towers in a nearly identical alignment to that of the DSSF towers would be constructed. The Alternative C alignment would be the same as that described for Alternative B in Section 2.10 but would be located an estimated 100 feet west of the DSSF towers, in a wider ROW. The Alternative C ROW would extend west of the approved DSSF gen-tie ROW, 60 feet into the adjacent Chuckwalla DWMA to accommodate wind sway of overhanging conductors over the DWMA boundary. No planned temporary or permanent ground disturbance would occur within the DWMA; ground disturbance in the DWMA would occur only during emergency maintenance. The access route to the towers would be on unpaved roads from Kaiser Road.

A laydown yard would be prepared for storage of materials. A material manager would inventory received material. Yard staff would load the transport trailers that would deliver the material to the field. Additional yards may be established to serve as material marshaling facilities, crew assembly locations, and equipment yards. These yards would all be within the project footprint and would not require any additional ground disturbance.

Construction of Alternative C would occur on the same schedule as Alternative B.

2.11.2 Construction, Operation, and Decommissioning Activities

Construction, operation, and maintenance of Alternative C would be identical to that described for Alternative B, except for some additional ground disturbance required for the new tower locations, pulling stations, and dead-end poles. As with Alternative B, pulling stations and dead-end poles will require an additional 450-foot fan-shaped area for construction equipment. Temporary ground disturbance for the alternative would be 256 acres and permanent ground disturbance would be 92 acres.

2.12 ALTERNATIVE D: CROSS-VALLEY ALIGNMENT OF GEN-TIE LINE

Portions of the Alternative D gen-tie line would not be located in a designated utility corridor. Construction of those portions of Alternative D on BLM-administered land would require a Plan Amendment to the CDCA Plan. Figure 2-1 (Project Overview) shows the portions of the gen-tie alternatives, including Alternative D, which would be located on BLM-administered land and outside of a BLM designated utility corridor. A total of 3.9 miles of Alternative D would be located on BLM land outside a designated utility corridor.

2.12.1 Overview

As shown on Figure 2-15 in Appendix A, Alternative D would parallel the approved Desert Sunlight gen-tie line for 2,400 feet along the east side of Kaiser Road until intersecting with the existing SCE transmission line ROW. Alternative D would turn southeast and run parallel to the existing transmission ROW for 7.2 miles, then turn south for 0.6 miles, continuing due west for 0.5 miles until it turns south across I-10 and continues 1,000 feet (not along any existing feature) to Red Bluff Substation. The center of the new line would be located 140 to 150 feet from the centerline of the existing SCE line, but would not be within the SCE ROW.

Along Kaiser Road, the center of the 160-foot transmission line ROW would be located an estimated 120 to 130 feet east from the center of the paved roadbed, on BLM land. The new transmission line would cross over or under the existing SCE line, subject to agreement with SCE, and then turn southeast along the south side of the corridor. The land ownership of the 160-foot-wide transmission easement would be as follows:

- From mile 0.0 to mile 0.5 on MWD land;
- From mile 0.5 to mile 2.3 on BLM land;
- From mile 2.3 to mile 5.0 on private land;
- From mile 5.0 to mile 5.6 on BLM land;
- From mile 5.6 to mile 6.6 on private land; and
- From mile 6.6 to mile 10.1 on BLM land into the Substation.

Of the 10.1-mile ROW, a total of 6 miles would be on BLM land and 4.1 miles would be on private land. For the portions on private land, 20 separate parcels would be crossed. The Applicant has not acquired land rights for all of these parcels, and would pursue easements through negotiations with the owners. Riverside County would issue a Public Use Permit for the MWD land and private land crossings and an Encroachment Permit for access into the County road ROW. Both MWD and the County would rely on this EIS to satisfy their CEQA obligations.

The 160-foot-wide corridor and additional fan-shaped areas at corners used for wire stringing for Alternative D would encompass 226 acres. The total length of Alternative D is 10.1 miles. The elevation of Alternative D varies from 592 to 765 feet above mean sea level. An estimated 59 transmission structures would be required for this alternative, including 51 tangents and 8 dead-ends. Four splicing locations and 16 guard structures would be used temporarily during construction. Permanent access roads would be constructed to provide access for maintenance of the gen-tie, as needed. Table 2-9 below provides a list of major gen-tie components, along with the acreage required for each component.

Table 2-9. Alternative D – Project Facilities, Components, and Percent of Gen-Tie Corridor

Project Facility or Component	Dimensions	Percent of Gen-Tie Corridor
Gen-tie line Corridor	Width: 160 feet and additional fan-shaped areas at corners Length: 10.5 miles Area: 226 acres	100
Permanent disturbance	86 acres	38.1
Total transmission structure footprint	2,345 square feet (0.05 acre)	< 0.1
Individual transmission structure footprint	Tangent Structure: 28.3 square feet Dead-end: 113.1 square feet	< 0.1
Permanent access roads	Width: 14 feet Length: 9.9 miles Area: 16.8 acres	7.4
Temporary access roads	Width: 14 feet Length: 10.8 mile Acres: 18.2 acres	8.1

2.12.2 Construction, Operation, and Decommissioning Activities

Construction, operation, and maintenance of Alternative D would be identical to that described for Alternative B, except it would require slightly less temporary and permanent ground disturbance. As with Alternative B, pulling stations and dead-end poles will require an additional 450-foot fan-shaped area for construction equipment. However, because it would require new access routes for the transmission line, Alternative D would require about 3,700 cubic yards of aggregate. The gen-tie staging area would be located along the ROW and would require another 2,000 cubic yards of aggregate.

2.13 ALTERNATIVE E: NEW CROSS-VALLEY ALIGNMENT

Portions of the Alternative E gen-tie line would not be located in a designated utility corridor. Construction of those portions of Alternative E on BLM-administered land would require a Plan Amendment to the CDCA Plan. Figure 2-1 (Project Overview) shows the portions of the gen-tie alternatives, including Alternative E, which would be located on BLM-administered land and outside of a BLM designated utility corridor. A total of 5.4 miles of Alternative E would be located on BLM land outside a designated utility corridor.

2.13.1 Overview

As shown on Figure 2-16 in Appendix A, Alternative E would exit the south end of the solar facility site at a point 0.8 miles from its southeast corner at a substation location shown on Figure 2-17 in Appendix A. It would travel southeast for 1.8 miles across properties owned in fee by MWD then turn east for 0.5 miles across MWD and BLM land, then run south for 0.25 miles until just before Highway 177. Alternative E would then turn southeast for 0.3 miles crossing over Highway 177 then travel due east for 1.75 miles over the MWD property and BLM land. It would then turn southeast for 1.3 miles, then due south for 3.8 miles. Alternative E would then turn west for 1.75 miles crossing the I-10 to reach the Red Bluff Substation.

The 160-foot transmission line ROW is an overland route that does not follow any existing road or improved utility ROW features. The new transmission line would have to cross over or under the existing SCE line in one location, subject to agreement with SCE. A crossing of Riverside County

ROW (Rice Road/CR 177 is also required. The land ownership of the 160-foot-wide transmission easement would be as follows:

- From mile 0 to mile 2.2 on MWD land;
- From mile 2.2 to mile 2.4 on BLM land;
- From mile 2.4 to mile 4.2 on MWD land and would require crossing Rice Road;
- From mile 4.2 to mile 6.2 on BLM land;
- From mile 6.2 to mile 6.45 on MWD land; and
- From mile 6.45 to mile 11.5 on BLM land into the Substation.

Of the 11.5-mile ROW, a total of 7.2 miles would be on BLM land and 4.3 miles would be on private land under the administration of MWD. A total of 7 MWD parcels would be crossed. Applicant has not acquired land rights for all of these parcels. Riverside County would issue a Public Use Permit for the MWD land and an encroachment permit for crossing the County road ROW. Both MWD and the County would rely on this EIS to satisfy their CEQA obligations.

The 160-foot-wide corridor and additional fan-shaped areas at corners used for wire stringing for Alternative E would encompass 244 acres. The total length of Alternative E is 11.5 miles. The elevation of Alternative E varies from 484 to 770 feet above mean sea level. An estimated 62 transmission structures would be required for this alternative, including 51 tangents and 11 dead-ends. Five splicing locations and 20 guard structures would be used during construction. Permanent access roads would be constructed in order to provide access for maintenance of the gen-tie, as needed. Table 2-10 provides a list of major gen-tie components, along with the acreage required for each component.

Table 2-10. Alternative E – Description of Components

Project Facility or Component	Dimensions	Percent of Gen-Tie Corridor
gen-tie line Corridor	Width: 160 feet plus additional fan-shaped areas at corners Length: 11.0 miles ROW Area: up to 244 acres	100
Permanent disturbance (within corridor)	85	35
Total transmission structure footprint	2,687 square feet (0.06 acres)	< 0.1
Individual transmission structure footprint	Tangent structure: 28.3 square feet; dead-end: 113.1 square feet	< 0.1
Permanent access roads	Width: 14 feet Length: 11 miles 18.7 acres	4.8
Temporary access roads	N/A	0

The Applicant proposes to use steel monopoles for the gen-tie line. Poles are expected to be 135 feet tall. Typical spacing between structures would be 900 to 1,100 feet. Self-weathering steel would be used for the monopoles, which are intended to blend with the surrounding mountains.

2.13.2 Construction, Operation, and Maintenance Activities

Construction, operation, and maintenance of Alternative E would be identical to that described for Alternative B, except for it would require slightly less temporary and permanent ground disturbance. As with Alternative B, pulling stations and dead-end poles will require an additional

450-foot fan-shaped area for construction equipment. However, because it would require new access routes for the transmission line, Alternative E would require about 3,700 cubic yards of aggregate. Another 2,000 cubic yards of aggregate would be required for the gen-tie staging area, which would be located along the ROW.

2.14 SUMMARY COMPARISON OF EFFECTS BY ALTERNATIVE

Table 2-11 presents a comparison among the solar facility action alternatives. Table 2-12 presents a comparison among the gen-tie action alternatives. Table 2-13 presents a comparison of solar facility and gen-tie action alternative combinations, building upon what is presented in Tables 2-11 and 2-12. For simplicity, numerical codes and shades of gray are used to indicate the severity and magnitude of direct, indirect, and cumulative environmental effects. For NEPA, a lower number and a lighter shade represents a less severe and a smaller magnitude of adverse environmental effects. For CEQA, a lower number and a lighter shade represents an environmentally superior action alternative combination. The information regarding CEQA significance and environmental superiority is provided for future use by CEQA Lead and Responsible Agencies and is not required under NEPA.

The combination of action alternatives that would have the fewest and least severe direct, indirect, and cumulative environmental effects is solar facility Alternative 6 (Reduced Footprint) plus gen-tie Alternative B (Shared Gen-Tie), or Alternative 6-B.

Alternative 6-B would have unavoidable adverse effects on Air Resources (exceed PM10, VOC, CO, NOx thresholds during construction), Vegetation Resources (direct effects on special status plants), Wildlife Resources (loss and fragmentation of habitat for special status species and displacement of wildlife), Cultural Resources (effects on NRHP-eligible resources and potentially buried resources), Noise and Vibration (construction and decommissioning traffic noise), Recreation (reduce Wilderness experience), Visual Resources (land scarring, contrast, degradation of scenic vistas), Water Resources (contribute to overdraft conditions if adequate mitigation is infeasible).

A complete No Action alternative is a combination of Alternative 1: No Action Alternative (No Plan Amendment) and Alternative A: No Gen-Tie, or Alternative 1-A. Alternative 1-A would not preclude future solar development on the project location; therefore it is possible that another project proponent would submit a ROW application to the BLM for use of the site for solar generation or other land uses, such as mining, livestock grazing, recreation, and energy.

There are two complete No Project with Plan Amendment alternatives under NEPA: Alternative 2-A, which is a combination of Alternative 2: No Project Alternative (with Plan Amendment to Find the Site Suitable for Solar Energy Development) and Alternative A: No Gen-Tie; or, Alternative 3-A, which is a combination of Alternative 3: No Project Alternative (with Plan Amendment to Find the Site Unsuitable for Solar Energy Development) and Alternative A: No Gen-Tie. Under Alternative 2-A, the proposed solar facility would not be approved, and a CDCA Plan Amendment would find the site suitable for large-scale solar energy development. With such an amendment, a similar solar project could be proposed on the project site in the future. Project impacts associated with such a future project would be analyzed at the time such a project is proposed. The project site would remain available for other types of uses allowable on BLM land, including mining, recreation, utilities, and other energy development.

Table 2-11. Comparison of Solar Facility Action Alternatives

Environmental Discipline	Alternative 4 (1,208 acres)	Alternative 5 (WHMA excluded – 1,161 acres)	Alternative 6 (southern parcel excluded – 1,044 acres)	Alternative 7 (southern parcels excluded, high-profile panels – 1,044 acres)
Air Resources	■ A larger area would create greater air resource impacts from increased ground disturbance, construction requirements, and truck trips. These impacts would not be substantially larger as the size difference is slight and many workforce and construction requirements would not change. ■ Cumulative adverse impacts would be temporary and unavoidable during construction ■ Unavoidable adverse effects would be similar for all alternatives CEQA: Roughly Environmentally Equivalent*	■ The smaller area of this alternative would slightly reduce potential air resource impacts, but many construction requirements and practices that generate these impacts would be identical to Alternative 4. The WHMA itself does not have any characteristics that make its exclusion further reduce air resource impacts. ■ Cumulative impacts would be temporary and unavoidable during construction ■ Unavoidable adverse effects would be similar across all alternatives CEQA: Roughly Environmentally Equivalent	■ The smaller area of this alternative would slightly reduce potential air resource impacts, but many construction requirements and practices that generate these impacts would be identical to Alternative 4. The southern parcel itself does not have any characteristics that make its exclusion further reduce air impacts. ■ Cumulative impacts would be temporary and unavoidable during construction ■ Unavoidable adverse effects would be similar across all alternatives CEQA: Roughly Environmentally Equivalent	■ The smaller area of this alternative would slightly reduce potential air resource impacts, but many construction requirements and practices that generate these impacts would be identical to Alternative 4. The southern parcel and high-profile panels do not have any characteristics that further reduce air impacts. ■ Cumulative impacts would be temporary and unavoidable during construction ■ Unavoidable adverse effects would be similar across all alternatives CEQA: Roughly Environmentally Equivalent

Table 2-11. Comparison of Solar Facility Action Alternatives

Environmental Discipline	Alternative 4 (1,208 acres)	Alternative 5 (WHMA excluded – 1,161 acres)	Alternative 6 (southern parcel excluded – 1,044 acres)	Alternative 7 (southern parcels excluded, high-profile panels – 1,044 acres)
Biological Resources – Vegetation	■ A larger area would have a greater impact on vegetation and habitat on site. Off-site impacts would be roughly equivalent to other alternatives. The site would impact 259 acres of state jurisdictional areas, 113 acres of state-jurisdictional streambeds, and 180 acres of Blue Palo Verde Ironwood Woodland (a special status plant community). ■ Would remove special-status plants including Utah vine milk-vetch, and desert unicorn-plant. ■ Cumulative effects: would contribute 661 acres of impact to Sonoran-Creosote Bush Scrub and 547 acres of impact to Desert Dry Wash Woodland ■ Unavoidable adverse effects would occur CEQA: Environmentally Inferior (same as Alt 5)	■ A smaller area would slightly reduce impacts to vegetation. Impacts to state jurisdictional areas would be 254 acres, and impacts to state-jurisdictional streambeds would be 110 acres. These reductions are not large enough to substantially reduce the impacts of Alternative 4. ■ Would remove special-status plants including Utah vine milk-vetch, and desert unicorn-plant. ■ Cumulative effects: would contribute 624 acres of impact to Sonoran-Creosote Bush Scrub and 537 acres of impact to Desert Dry Wash Woodland ■ Unavoidable adverse effects would be nearly identical to Alternative 4 CEQA: Environmentally Inferior (same as Alt 4)	■ Alternative 6 would reduce impacts to on site habitat and vegetation. Impacts to Blue Palo Verde–Ironwood Woodland, a special status plant community, would be substantially reduced to 98 acres (a 46 percent reduction in impacts). Impacts to state-jurisdictional streambeds would be reduced to 79 acres, and total impacts to state jurisdictional areas would be reduced to 164 acres. Alternative 6 would not require use of two separate parcels of land and would not require an underground electrical connection across the wash. ■ Cumulative effects: would contribute 624 acres of impact to Sonoran-Creosote Bush Scrub and 420 acres of impact to Desert Dry Wash Woodland ■ Unavoidable adverse effects would exist, but would be reduced for special status species and state-jurisdictional areas CEQA: Environmentally Superior (same as Alt 7)	■ Alternative 7 would reduce impacts to on site habitat and vegetation. Impacts to Blue Palo Verde–Ironwood Woodland, a special status plant community, would be substantially reduced to 98 acres (a 46 percent reduction in impacts). Impacts to state-jurisdictional streambeds would be reduced to 79 acres, and total impacts to state jurisdictional areas would be reduced to 164 acres. Alternative 6 would not require use of two separate parcels of land and would not require an underground electrical connection across the wash. ■ ■ Cumulative effects: would contribute 624 acres of impact to Sonoran-Creosote Bush Scrub and 420 acres of impact to Desert Dry Wash Woodland ■ Unavoidable adverse effects would exist, but would be reduced for special status species and state-jurisdictional areas ■ CEQA: Environmentally Superior (same as Alt 6)

Table 2-11. Comparison of Solar Facility Action Alternatives

Environmental Discipline	Alternative 4 (1,208 acres)	Alternative 5 (WHMA excluded – 1,161 acres)	Alternative 6 (southern parcel excluded – 1,044 acres)	Alternative 7 (southern parcels excluded, high-profile panels – 1,044 acres)
Biological Resources – Wildlife	■ A larger area would have a greater impact on wildlife habitat on site and wildlife movement. Off-site impacts would be roughly equivalent to other alternatives. The site would impact 46 acres in the Palen-Ford Wildlife Habitat Management Area ■ Cumulative effects: contribute 1,208 acres impact desert tortoise habitat. ■ Cumulative effects: loss of habitat would be greater due to larger size of project. ■ Unavoidable adverse effects would occur CEQA: Environmentally Inferior (same as Alt 5)	■ A smaller area would slightly reduce impacts to wildlife habitat. Project would avoid impacts to the Palen-Ford Wildlife Habitat Management Area. These reductions are not large enough to substantially change the impacts of Alternative 4. ■ Cumulative effects: contribute 1,161 acres impact to desert tortoise habitat. ■ Cumulative effects: loss of habitat would be similar to impacts of Alternative 4. ■ Unavoidable adverse effects would be nearly identical to Alternative 4 CEQA: Environmentally Inferior (same as Alt 4)	■ A smaller area would slightly reduce impacts to wildlife habitat. Project would avoid impacts to Blue Palo Verde-Ironwood Woodland in the southern parcel. This habitat which provides habitat elements not available in the surrounding creosote scrub. These reductions would reduce the impacts of Alternative 4. ■ Cumulative effects: contribute 1,044 acres impact to desert tortoise habitat. ■ Cumulative effects: loss of habitat would be similar to impacts of Alternative 4. ■ Unavoidable adverse effects would be nearly identical to Alternative 4 CEQA: Environmentally Superior (Same as Alt 7)	■ A smaller area would slightly reduce impacts to wildlife habitat. Project would avoid impacts to Blue Palo Verde-Ironwood Woodland in the southern parcel. This habitat which provides habitat elements not available in the surrounding creosote scrub. These reductions would reduce the impacts of Alternative 4. ■ Cumulative effects: contribute 1,044 acres impact to desert tortoise habitat. ■ Cumulative effects: loss of habitat would be similar to impacts of Alternative 4. ■ Unavoidable adverse effects would be nearly identical to Alternative 4 ■ CEQA: Environmentally Superior (Same as Alt 7)
Climate Change	■ This Alternative would generate greater greenhouse gas emissions due to increased demands for construction, transportation, and maintenance of a slightly larger area. These impacts would not be substantially larger, however, as the size difference is slight and many workforce and construction requirements would not change. CEQA: Roughly Environmentally Equivalent	■ A slightly smaller area would generate slightly fewer greenhouse gas emissions. Many construction and transportation practices would be consistent with Alternative 4 despite the reduction in size, and impacts would be nearly identical. The WHMA itself does not have any characteristics that make its exclusion further reduce climate change impacts. CEQA: Roughly Environmentally Equivalent	■ A slightly smaller area would generate slightly fewer greenhouse gas emissions. Many construction and transportation practices would be consistent with Alternative 4 despite the reduction in size, and impacts would be nearly identical. The southern parcel itself does not have any characteristics that make its exclusion further reduce climate change impacts. CEQA: Roughly Environmentally Equivalent	■ A slightly smaller area would generate slightly fewer greenhouse gas emissions. Many construction and transportation practices would be consistent with Alternative 4 despite the reduction in size, and impacts would be nearly identical. The southern parcel itself does not have any characteristics that make its exclusion further reduce climate change impacts. CEQA: Roughly Environmentally Equivalent

Table 2-11. Comparison of Solar Facility Action Alternatives

Environmental Discipline	Alternative 4 (1,208 acres)	Alternative 5 (WHMA excluded – 1,161 acres)	Alternative 6 (southern parcel excluded – 1,044 acres)	Alternative 7 (southern parcels excluded, high-profile panels – 1,044 acres)
Cultural Resources	■ Would adversely affect potentially one NRHP-eligible historic district, and potentially affect unknown buried resources. ■ Cumulative effects: contribute to unavoidable adverse effects in I-10 region and Southern California Desert Region ■ Unavoidable adverse effects would occur CEQA: Roughly Environmentally Equivalent	Same as Alt 4 as the disturbed area would be only marginally smaller. CEQA: Roughly Environmentally Equivalent	Same as Alt 4 but a reduced footprint would likely reduce the total number of cultural resources impacted. CEQA: Roughly Environmentally Equivalent	Same as Alt 4 but a reduced footprint would likely reduce the total number of cultural resources impacted. CEQA: Roughly Environmentally Equivalent
Paleontological Resources	■ The geologic units present at the site have a high potential to contain vertebrate fossils and other paleontological resources. A larger area would have a greater potential for adverse direct effects on the resources. ■ The potential for indirect effects to paleontological resources is also high. ■ Cumulative effects would be adverse, but could result in an overall benefit to science CEQA: Roughly Environmentally Inferior	Same as Alt 4 as the disturbed area would be only marginally smaller. CEQA: Roughly Environmentally Inferior	Same as Alt 4 but a reduced footprint would likely reduce the total number of paleontological resources impacted. CEQA: Roughly Environmentally Equivalent	Same as Alt 4 but a reduced footprint would likely reduce the total number of paleontological resources impacted. CEQA: Roughly Environmentally Equivalent

Table 2-11. Comparison of Solar Facility Action Alternatives

Environmental Discipline	Alternative 4 (1,208 acres)	Alternative 5 (WHMA excluded – 1,161 acres)	Alternative 6 (southern parcel excluded – 1,044 acres)	Alternative 7 (southern parcels excluded, high-profile panels – 1,044 acres)
Fire and Fuels Management	■ Alternative 4 would have a slightly larger impact on fire and fuels management due to the larger area of impact and the fire risks of additional equipment and workforce. Quantifying this increased risk precisely is not possible, but it would not be significantly greater. ■ Indirect effects: non-native plant invasion increases susceptibility to wildfire ■ Cumulative effects: Project would contribute to risk of increased fire frequency CEQA: Roughly Environmentally Equivalent	■ Alternative 5 would have a slightly reduced impact on fire and fuels management due to the smaller area of impact and lower equipment and workforce requirements. Many construction practices would be identical to Alternative 4. The WHMA itself does not have any characteristics that make its exclusion further reduce fire risk. ■ Indirect effects: non-native plant invasion increases susceptibility to wildfire ■ Cumulative effects would be substantially the same as for Alternative 4 CEQA: Roughly Environmentally Equivalent	■ Alternative 6 would have a slightly reduced impact on fire and fuels management due to the smaller area of impact lower equipment and workforce requirements. Many construction practices would be identical to Alternative 4. The southern parcel does not have any characteristics that make its exclusion further reduce fire risk. ■ Indirect effects: non-native plant invasion increases susceptibility to wildfire ■ Cumulative effects would be substantially the same as for Alternative 4 CEQA: Roughly Environmentally Equivalent	■ Alternative 7 would have a slightly reduced impact on fire and fuels management due to the smaller area of impact lower equipment and workforce requirements. Many construction practices would be identical to Alternative 4. The southern parcel does not have any characteristics that make its exclusion further reduce fire risk. ■ Indirect effects: non-native plant invasion increases susceptibility to wildfire ■ Cumulative effects would be substantially the same as for Alternative 4 CEQA: Roughly Environmentally Equivalent
Soils	■ Alternative 4 would have a slightly larger impact on soils due to the larger area of impact and the additional equipment and workforce. Geological hazards and risks would not increase due to increased size. ■ Cumulative effects: contribute to wind and water erosion during construction CEQA: Roughly Environmentally Equivalent	■ Alternative 5 would have a slightly reduced impact on soils due to the smaller area of impact and lower equipment and workforce requirements. Many construction practices would be identical to Alternative 4 l. The reduced size would not reduce risks and potential impacts of geologic hazards. The WHMA itself does not have any characteristics that make its exclusion further reduce impacts to soils and geology. ■ Cumulative effects: contribute to wind and water erosion during construction CEQA: Roughly Environmentally Equivalent	■ Alternative 6 would have a slightly reduced impact on fire and fuels management due to the smaller area of impact lower equipment and workforce. Many construction practices would be identical to Alternative 4. The reduced size would not reduce risks and potential impacts of geologic hazards. The southern parcel itself does not have any characteristics that make its exclusion further reduce impacts to soils and geology. ■ Cumulative effects: contribute to wind and water erosion during construction CEQA: Roughly Environmentally Equivalent	■ Alternative 7 would have a slightly reduced impact on fire and fuels management due to the smaller area of impact lower equipment and workforce. Many construction practices would be identical to Alternative 4. The reduced size would not reduce risks and potential impacts of geologic hazards. The southern parcel itself does not have any characteristics that make its exclusion further reduce impacts to soils and geology. ■ Cumulative effects: contribute to wind and water erosion during construction CEQA: Roughly Environmentally Equivalent

Table 2-11. Comparison of Solar Facility Action Alternatives

Environmental Discipline	Alternative 4 (1,208 acres)	Alternative 5 (WHMA excluded – 1,161 acres)	Alternative 6 (southern parcel excluded – 1,044 acres)	Alternative 7 (southern parcels excluded, high-profile panels – 1,044 acres)
Minerals	■ Because of its size, the demands on necessary mineral resources for construction would be slightly greater. The demand is negligible relative to the local supply. The configuration of this alternative would not block or restrict access to other mineral resources in the area. ■ There would be no adverse cumulative effects. CEQA: Roughly Environmentally Equivalent	■ The demands of this alternative on mineral resources would not be significantly different than those of Alternative 4. The WHMA does not contain any additional mineral resources, and its exclusion would not further improve access to any mineral resources. ■ There would be no adverse cumulative effects. CEQA: Roughly Environmentally Equivalent	■ The demands of this alternative on mineral resources would not be significantly different than those of Alternative 4. The southern parcel does not contain any additional mineral resources, and its exclusion would not further improve access to any mineral resources. ■ There would be no adverse cumulative effects. CEQA: Roughly Environmentally Equivalent	■ The demands of this alternative on mineral resources would not be significantly different than those of Alternative 4. The southern parcel does not contain any additional mineral resources, and its exclusion would not further improve access to any mineral resources. ■ There would be no adverse cumulative effects. CEQA: Roughly Environmentally Equivalent
Lands and Realty	■ Would impact the Palen-Ford WHMA and preclude it from uses besides solar electricity generation. This portion of the WHMA has been isolated by the neighboring DSSF, reducing its importance as a protected space. Would impacts existing encumbrances. ■ Cumulative effects: would contribute to the conversion of land along the I-10 corridor, due to the scale of land use conversion cumulative adverse effects would be substantial ■ Unavoidable adverse effects would occur CEQA: Environmentally Inferior (same as Alt 5)	■ This reduced area alternative would not directly impact the Palen-Ford WHMA. Alternative would impact existing encumbrances. ■ Cumulative effects: project would contribute to the conversion of land along the I-10 corridor, due to the scale of land use conversion cumulative adverse effects would be substantial ■ Unavoidable adverse effects would occur CEQA: Environmentally Inferior (Same as Alt 4)	■ Would impact the Palen-Ford WHMA and preclude it from all uses besides solar electricity generation same as Alt 4. Would not affect existing encumbrances. ■ Cumulative effects: project would contribute to the conversion of land along the I-10 corridor, due to the scale of land use conversion cumulative adverse effects would be substantial ■ Unavoidable adverse effects would occur CEQA: Environmentally Superior (same as Alt 7)	■ Would impact the Palen-Ford WHMA and preclude it from all uses besides solar electricity generation same as Alt 4. Would not affect existing encumbrances. ■ Cumulative effects: project would contribute to the conversion of land along the I-10 corridor, due to the scale of land use conversion cumulative adverse effects would be substantial ■ Unavoidable adverse effects would occur CEQA: Environmentally Superior (same as Alt 6)

Table 2-11. Comparison of Solar Facility Action Alternatives

Environmental Discipline	Alternative 4 (1,208 acres)	Alternative 5 (WHMA excluded – 1,161 acres)	Alternative 6 (southern parcel excluded – 1,044 acres)	Alternative 7 (southern parcels excluded, high-profile panels – 1,044 acres)
Noise and Vibration	■ Due to the distance between the solar facility and nearest sensitive receptors on-site noise impacts would not occur ■ Traffic would result in little noise effect in Desert Center due to the noise generated by traffic on I-10. Would result in a noticeable increase in traffic noise levels along Kaiser Road at Lake Tamarisk. Increase would be conditionally acceptable. ■ Construction would not cause perceptible ground vibrations. ■ Cumulative effects: project would not contribute to on-site cumulative noise effects. Traffic noise would contribute to a cumulative increase in noise along Kaiser Road at Lake Tamarisk. Increase would remain within a conditionally acceptable range. ■ Unavoidable adverse effects would occur CEQA: Roughly Environmentally Equivalent	■ This reduced area alternative would have substantially the same impacts as Alternative 4 for both on-site noise and traffic. ■ Cumulative effects: impacts would be substantially the same as for Alternative 4. ■ Unavoidable adverse effects would occur CEQA: Roughly Environmentally Equivalent	■ This reduced area alternative would have substantially the same impacts as Alternative 4 for both on-site noise and traffic. ■ Cumulative effects: impacts would be substantially the same as for Alternative 4. ■ Unavoidable adverse effects would occur CEQA: Roughly Environmentally Equivalent	■ This reduced area alternative would have substantially the same impacts as Alternative 4 for both on-site noise and traffic. ■ Cumulative effects: impacts would be substantially the same as for Alternative 4. ■ Unavoidable adverse effects would occur CEQA: Roughly Environmentally Equivalent

Table 2-11. Comparison of Solar Facility Action Alternatives

Environmental Discipline	Alternative 4 (1,208 acres)	Alternative 5 (WHMA excluded – 1,161 acres)	Alternative 6 (southern parcel excluded – 1,044 acres)	Alternative 7 (southern parcels excluded, high-profile panels – 1,044 acres)
Public Health and Safety	■ Larger land area would be disturbed but practices and risks that could generate public health and safety impacts are not proportional to area of disturbance. Impacts would be the same across all alternatives. ■ Cumulative effects: Contribute to risk of multiple emergencies occurring at the same time. Response plans and fire management plans would reduce effects CEQA: Roughly Environmentally Equivalent	■ Smaller land area would be disturbed but public health and safety impacts would be the same across all alternatives. Exclusion of the WHMA would not reduce these potential impacts. ■ Cumulative effects: impacts would be substantially the same as for Alternative 4 CEQA: Roughly Environmentally Equivalent	■ Smaller land area would be disturbed but public health and safety impacts would be the same across all alternatives. Exclusion of the southern parcel would not reduce these potential impacts. ■ Cumulative effects: impacts would be substantially the same as for Alternative 4 CEQA: Roughly Environmentally Equivalent	■ Smaller land area would be disturbed but public health and safety impacts would be the same across all alternatives. Exclusion of the southern parcel would not reduce these potential impacts. ■ Cumulative effects: impacts would be substantially the same as for Alternative 4 CEQA: Roughly Environmentally Equivalent
Recreation	■ Effects to off-site wilderness areas by diminishing the potential for "wilderness experience." Impacts are not related to the size or configuration of solar field alternatives. ■ Would close 5.7 miles of open OHV routes, a relatively minor recreational effect in light of the other available open routes in the area. ■ Cumulative effects: Contribute to the diminishment of wilderness experience and the loss of lands available for recreation. ■ Unavoidable adverse effects would occur. CEQA: Roughly Environmentally Equivalent	■ This reduced area alternative would have substantially the same impacts as Alternative 4. Impacts are not related to the size or configuration of solar field alternatives. ■ Would close to 5.7 miles of open OHV routes, a relatively minor recreational effect in light of the other available open routes in the area. ■ Cumulative effects: impacts would be substantially the same as for Alternative 4 ■ Unavoidable adverse effects would occur CEQA: Roughly Environmentally Equivalent	■ This reduced area alternative would have substantially the same impacts as Alternative 4. Impacts are not related to the size or configuration of solar field alternatives. ■ Would close to 4.2 miles of open OHV routes, but facilitates access to northwest routes. ■ Cumulative effects: impacts would be substantially the same as for Alternative 4 ■ Unavoidable adverse effects would occur CEQA: Roughly Environmentally Equivalent	■ This reduced area alternative would have substantially the same impacts as Alternative 4. Impacts are not related to the size or configuration of solar field alternatives. ■ Would close to 4.2 miles of open OHV routes, but facilitates access to northwest routes. ■ Cumulative effects: impacts would be substantially the same as for Alternative 4 ■ Unavoidable adverse effects would occur CEQA: Roughly Environmentally Equivalent

Table 2-11. Comparison of Solar Facility Action Alternatives

Environmental Discipline	Alternative 4 (1,208 acres)	Alternative 5 (WHMA excluded – 1,161 acres)	Alternative 6 (southern parcel excluded – 1,044 acres)	Alternative 7 (southern parcels excluded, high-profile panels – 1,044 acres)
Social and Economic	■ Similar construction workforce would be required across all alternatives. Impacts to local economies, housing, and quality of life resulting from a marginal increase in workforce and construction requirements would be impossible to precisely quantify, potentially offset by increased benefits and limited. ■ Cumulative effects: no adverse social or economic effects. CEQA: Roughly Environmentally Equivalent	■ Same as Alternative 4. The exclusion of the WHMA would not specifically affect social and economic impacts. ■ Cumulative effects: no adverse social or economic effects. CEQA: Roughly Environmentally Equivalent	■ Same as Alternative 4. The exclusion of the southern parcel would not specifically affect social and economic impacts. ■ Cumulative effects: no adverse social or economic effects. CEQA: Roughly Environmentally Equivalent	■ Same as Alternative 4. The exclusion of the southern parcel would not specifically affect social and economic impacts. ■ Cumulative effects: no adverse social or economic effects. ■ CEQA: Roughly Environmentally Equivalent
Environmental Justice	■ Alternative 4 would not disproportionately impact minority or low income populations. Boundaries for the solar field alternatives are approximately the same and impacts to surrounding communities would not differ based on marginal changes to size and configuration. ■ Cumulative effects: no adverse environmental justice effects No CEQA significance criteria for Environmental Justice.	■ Despite size differences, boundaries for the solar field alternatives are approximately the same and populations affected would be the same. ■ Cumulative effects: no adverse environmental justice effects No CEQA significance criteria for Environmental Justice.	■ Despite size differences, boundaries for the solar field alternatives are approximately the same and populations affected would be the same. ■ Cumulative effects: no adverse environmental justice effects No CEQA significance criteria for Environmental Justice.	■ Despite size differences, boundaries for the solar field alternatives are approximately the same and populations affected would be the same. ■ Cumulative effects: no adverse environmental justice effects No CEQA significance criteria for Environmental Justice.
Special Designations	■ Would degrade value of WHMA. ■ Would degrade value of Wilderness. ■ Cumulative effects on Wilderness and ACECs. No CEQA significance criteria for special designations.	■ Would degrade value of Wilderness. ■ Cumulative effects on Wilderness and ACECs. No CEQA significance criteria for special designations.	■ Would degrade value of WHMA. ■ Would degrade value of Wilderness. ■ Cumulative effects on Wilderness and ACECs. No CEQA significance criteria for special designations.	■ Would degrade value of WHMA. ■ Would degrade value of Wilderness. ■ Cumulative effects on Wilderness and ACECs. No CEQA significance criteria for special designations. t

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Transportation and Public Access	■ The number of project truck trips would be the same or similar regardless of which solar facility alternative was built. The addition of project construction related traffic would increase the delay at the intersections by less than one second and would not reduce the LOS to below an acceptable level. ■ Cumulative effects: Trips generated by Alternative 4 would combine with trips from other projects to reduce the LOS, but not to a less than acceptable level. Overall, not substantially adverse. CEQA: Roughly Environmentally Equivalent	■ Despite size differences, access routes would be the same and impacts to traffic would not differ. The exclusion of the WHMA would not change traffic impacts. ■ Cumulative effects: Same as Alternative 4 CEQA: Roughly Environmentally Equivalent	■ Despite size differences, access routes would be the same and impacts to traffic would not differ. The exclusion of the southern portion would not change impacts on traffic. ■ Cumulative effects: Same as Alternative 4 CEQA: Roughly Environmentally Equivalent	■ Despite size differences, access routes would be the same and impacts to traffic would not differ. The exclusion of the southern portion would not change impacts on traffic. ■ Cumulative effects: Same as Alternative 4 CEQA: Roughly Environmentally Equivalent

Table 2-11. Comparison of Solar Facility Action Alternatives

Environmental Discipline	Alternative 4 (1,208 acres)	Alternative 5 (WHMA excluded – 1,161 acres)	Alternative 6 (southern parcel excluded – 1,044 acres)	Alternative 7 (southern parcels excluded, high-profile panels – 1,044 acres)
Visual Resource	■ Temporary visual effects due to construction equipment, materials, and workforce. ■ Visual effect would be adverse but would not substantially degrade the character and quality of the landscape from Eagles Mountains and Desert Lily ACEC ■ Visual effect would be substantial and adverse from Coxcomb Mountains, Kaiser Road in the proposed project vicinity, ■ Affects dark sky resource at Joshua Tree National Park ■ Cumulative effects: Contribute to the conversion of natural desert landscapes to landscapes that contrast with the natural character ■ Unavoidable adverse effects would occur. CEQA: Environmentally Inferior (same as Alt 5)	■ Construction, operations, and maintenance would be essentially the same as Alternative 4 and the effects would be substantially similar. ■ Cumulative effects: same as Alternative 4 ■ Unavoidable adverse effects would occur. CEQA: Environmentally Inferior (same as Alt 4)	■ Construction, operations, and maintenance would be essentially the same as Alternative 4 and the effects would be substantially similar. ■ For viewers on Kaiser Road, the elimination of the smaller southern development area would render the solar facility noticeably less visible. ■ Cumulative effects: same as Alternative 4 ■ Unavoidable adverse effects would occur. CEQA: Environmentally Superior	■ Construction, operations, and maintenance would be essentially the same as Alternative 4 and the effects would be substantially similar. ■ For viewers on Kaiser Road, the high-profile panels would render the solar facility noticeably more visible. ■ Cumulative effects: same as Alternative 4 ■ Unavoidable adverse effects would occur. CEQA: Environmentally Inferior (worse than Alt 4 and 5)

Table 2-11. Comparison of Solar Facility Action Alternatives

Environmental Discipline	Alternative 4 (1,208 acres)	Alternative 5 (WHMA excluded – 1,161 acres)	Alternative 6 (southern parcel excluded – 1,044 acres)	Alternative 7 (southern parcels excluded, high-profile panels – 1,044 acres)
Water Resources	■ Alternative 4 would require more water for construction (estimated 400 to 500 afy). ■ Mitigation would reduce adverse effects to surface water and drainage patterns, stormwater drainage systems, and flood hazard areas, but could result in adverse effects to desert tortoise, air quality, energy, climate change, noise, and traffic. ■ Would be consistent with beneficial uses and water quality criteria defined in the Basin Plan. ■ Cumulative effects: With mitigation, Alternative 4 would not contribute to cumulative effects associated with groundwater supply and recharge. There would be no cumulative effects associated with surface water, stormwater, flood hazard, or water quality CEQA: Roughly Environmentally Equivalent	■ Alternative 5 would require less water for construction (estimated 385 to 480 afy). ■ Mitigation would reduce adverse effects to surface water and drainage patterns, stormwater drainage systems, and flood hazard areas, but could result in adverse effects to desert tortoise, air quality, energy, climate change, noise, and traffic ■ Cumulative effects: Same as Alternative 4 CEQA: Roughly Environmentally Equivalent	■ Alternative 6 would require less water for construction (estimated 350 to 435 afy). ■ Mitigation would reduce adverse effects to surface water and drainage patterns, stormwater drainage systems, and flood hazard areas, but could result in adverse effects to desert tortoise, air quality, energy, climate change, noise, and traffic ■ Cumulative effects: Same as Alternative 4 CEQA: Roughly Environmentally Equivalent	■ Alternative 6 would require less water for construction (estimated 350 to 435 afy). ■ Mitigation would reduce adverse effects to surface water and drainage patterns, stormwater drainage systems, and flood hazard areas, but could result in adverse effects to desert tortoise, air quality, energy, climate change, noise, and traffic ■ Cumulative effects: Same as Alternative 4 CEQA: Roughly Environmentally Equivalent

Table 2-11. Comparison of Solar Facility Action Alternatives

Environmental Discipline	Alternative 4 (1,208 acres)	Alternative 5 (WHMA excluded – 1,161 acres)	Alternative 6 (southern parcel excluded – 1,044 acres)	Alternative 7 (southern parcels excluded, high-profile panels – 1,044 acres)
Solid and Hazardous Wastes	■ Alternative 4 would require more infrastructure and employ a slightly larger workforce. It could potentially generate more solid and hazardous wastes and require increased disposal efforts. Differences across alternatives are slight and would likely be insubstantial ■ Cumulative effects: Minimal incremental contribution CEQA: Roughly Environmentally Equivalent	■ Alternative 5 would potentially generate fewer solid and hazardous waste impacts. The size difference is not large enough to substantially reduce impacts. Exclusion of the WHMA specifically would not markedly reduce impacts associated with solid and hazardous wastes. ■ Cumulative effects: Minimal incremental contribution CEQA: Roughly Environmentally Equivalent	■ Alternative 6 would potentially generate fewer solid and hazardous waste impacts. The size difference is not large enough to substantially reduce impacts. Exclusion of the southern parcel specifically would not markedly reduce impacts associated with solid and hazardous wastes. ■ Cumulative effects: Minimal incremental contribution CEQA: Roughly Environmentally Equivalent	■ Alternative 7 would potentially generate fewer solid and hazardous waste impacts. The size difference is not large enough to substantially reduce impacts. Exclusion of the southern parcel specifically would not markedly reduce impacts associated with solid and hazardous wastes. ■ Cumulative effects: Minimal incremental contribution CEQA: Roughly Environmentally Equivalent

* For CEQA determinations, Environmentally Equivalent means that there is no difference between impacts associated with each alternative. Roughly Environmentally Equivalent indicates that while there are slight differences in impacts, these differences are not substantial, identifiable, and/or quantifiable.

Table 2-12. Comparison of Gen-Tie Action Alternatives

Environmental Discipline	Alternative B (92 acres)	Alternative C (92 acres)	Alternative D (86 acres)	Alternative E (85 acres)
Air Quality	■ Effects from construction, ground disturbance, and truck trips ■ Cumulative impacts would not occur because construction of the Desert Sunlight gen-tie and Alternative B conductor stringing would use same crew at the same time. No additional work required for Alternative B. CEQA: Environmentally Superior	■ Impacts would be identical to Alternative B ■ Cumulative impacts would be temporary and unavoidable during construction CEQA: Environmentally Inferior (same as Alts D and E)	■ The slight decrease in area would negligibly change requirements for construction, and impacts would be equivalent to Alternative B ■ Cumulative impacts would be temporary and unavoidable during construction CEQA: Environmentally Inferior (same as Alts C and E)	■ The slight decrease in area would negligibly change requirements for construction, and impacts would be equivalent to Alternative B ■ Cumulative impacts would be temporary and unavoidable during construction CEQA: Environmentally Inferior (same as Alts C and D)
Biological Resources – Vegetation	■ Alternative B would affect 41 acres of creosote (1:1 mitigation) and 51 acres of Blue Palo-Verde Ironwood habitat (3:1 mitigation). Surveys indicate presence of desert unicorn (1 plant found), a special status species. 51 acres of state jurisdictional streambeds would be impacted ■ Cumulative impacts would not occur because construction of the Desert Sunlight gen-tie and Alternative B conductor stringing would use same crew at the same time. No additional work required for Alternative B. ■ Unavoidable adverse effects would occur CEQA: Environmentally Superior	■ Alternative C would have identical direct impacts to Alternative B ■ Cumulative effects would include impacts to 47 acres of Sonoran-Creosote Bush Scrub and to 39 acres of desert dry wash woodland. ■ Unavoidable adverse effects would occur CEQA: Environmentally Intermediate	■ Alternative D would affect 20 acres of creosote, 39 acres of Blue Palo-Verde Ironwood habitat, and 27 acres of disused agricultural lands. Surveys indicate presence of Emory's Crucifixion thorn (2 plants found) and Desert Unicorn (1 plant found). 39 acres of state jurisdictional streambeds would be impacted ■ Cumulative effects would include impacts to 36 acres of Sonoran-Creosote Bush Scrub and to 17 acres of desert dry wash woodland. ■ Unavoidable adverse effects would occur CEQA: Environmentally Intermediate	■ Alternative E would affect 5 acres of creosote, 13 acres of creosote on partially stabilized sand fields (5:1 mitigation), 7 acres of active sand dunes (5:1 mitigation), and 60 acres of Blue Palo-Verde Ironwood habitat. Surveys indicate presence of Emory's Crucifixion thorn (1 plant found) and Desert Unicorn (65 plants found). 60 acres of state jurisdictional streambeds would be impacted ■ Cumulative effects would include impacts to 53 acres of Sonoran-Creosote Bush Scrub and to 31 acres of desert dry wash woodland. ■ Unavoidable adverse effects would occur CEQA: Environmentally Inferior

Table 2-12. Comparison of Gen-Tie Action Alternatives

Environmental Discipline	Alternative B (92 acres)	Alternative C (92 acres)	Alternative D (86 acres)	Alternative E (85 acres)
Biological Resources – Wildlife	■ Long-term loss of 96 acres of wildlife habitat. ■ 34 acres of impacts to CHU ■ Would require development of 2 acres of the Chuckwalla DWMA overlap area ■ Cumulative impacts would not occur because construction of the Desert Sunlight gen-tie and Alternative B conductor stringing would use same crew at the same time. No additional work required for Alternative B. ■ Unavoidable adverse effects would occur CEQA: Environmentally Superior	■ Alternative C would have identical direct impacts to Alternative B. Alternative C ROW would 60 feet into the DWMA along Kaiser Road. ■ Cumulative effects would contribute a loss of 224 acres of desert tortoise habitat ■ Unavoidable adverse effects would occur CEQA: Environmentally Intermediate	■ Alternative D would have direct impacts similar to Alternative B ■ Impacts of Alternative D to CHU would be reduced to 12 acres ■ Would require development of 2 acres of the Chuckwalla DWMA overlap area ■ Would impact 6 acres of Palen-Ford WHMA ■ Cumulative effects would contribute a loss of 190 acres of desert tortoise habitat along ROW ■ Unavoidable adverse effects would occur CEQA: Environmentally Intermediate	■ Alternative E would have direct impacts similar to Alternative B ■ Construction impacts of Alternative E to wildlife management areas would 2 acres to DWMA, 1.8 acres to overlap area, and 52 acres to Palen Ford WHMA ■ Would impact sand dune habitat and Mojave fringe-toed lizard ■ Cumulative effects would contribute a loss of 222 acres of desert tortoise habitat ■ Unavoidable adverse effects would occur CEQA: Environmentally Inferior
Climate Change	■ Would not generate greater greenhouse gas emissions as the size difference is negligible and workforce and construction requirements would be identical. ■ Cumulative impacts would not occur because construction of the Desert Sunlight gen-tie and Alternative B conductor stringing would use same crew at the same time. No additional work required for Alternative B. CEQA: Environmentally Superior	■ Alternative C would be identical in its impacts to Alternative B ■ Cumulative effects: minimal contribution CEQA: Environmentally Inferior (same as Alts D and E)	■ Construction and transportation practices would be identical to Alternative B, and the size difference would be negligible. ■ GHG effects associated with construction and decommissioning would be similar to those effects under Alternative B ■ Cumulative effects: minimal contribution CEQA: Environmentally Inferior (same as Alts C and E)	■ Construction and transportation practices would be identical to Alternative B, and the size difference would be negligible. ■ GHG effects associated with construction and decommissioning would be similar to those effects under Alternative B ■ Cumulative effects: minimal contribution CEQA: Environmentally Inferior (same as Alts C and D)

Table 2-12. Comparison of Gen-Tie Action Alternatives

Environmental Discipline	Alternative B (92 acres)	Alternative C (92 acres)	Alternative D (86 acres)	Alternative E (85 acres)
Cultural Resources	■ May directly affect 1 NRHP-eligible and 18 potentially eligible cultural resources and potential buried archaeological sites. ■ Adverse indirect effects to 3 NRHP-eligible cultural resources: 1 prehistoric district, 1 prehistoric trail, and 1 historic district may occur ■ Cumulative effects: contribute to unavoidable adverse effects in I-10 region and Southern California Desert Region ■ Unavoidable adverse effects would occur CEQA: Environmentally Inferior (same as Alt C)	■ Same as Alternative B. CEQA: Environmentally Inferior (same as Alt B)	■ May directly affect 1 NRHP-eligible and 3 potentially eligible cultural resources and buried sites. ■ Adverse indirect effects to 4 NRHP-eligible cultural resources: 1 prehistoric district, 1 prehistoric trail, 1 historic site and 1 historic district may occur ■ Cumulative effects: contribute to unavoidable adverse effects in I-10 region and Southern California Desert Region ■ Unavoidable adverse effects would occur CEQA: Environmentally Intermediate	■ May directly affect 1 NRHP-eligible and 1 potentially eligible cultural resources and buried sites. ■ Entire alignment not yet surveyed ■ Adverse indirect effects to 3 NRHP-eligible cultural resources: 1 prehistoric district, 1 prehistoric trail, and 1 historic district may occur ■ Cumulative effects: contribute to unavoidable adverse effects in I-10 region and Southern California Desert Region ■ Unavoidable adverse effects would occur CEQA: Environmentally Superior
Paleontological Resources	■ The geologic units have a moderate and high potential to contain vertebrate fossils and other paleontological resources. ■ Potential for indirect effects is high. ■ Cumulative impacts would not occur because construction of the Desert Sunlight gen-tie and Alternative B conductor stringing would use same crew at the same time. No additional work required for Alternative B. CEQA: Environmentally Superior	■ Same as Alternative B ■ Cumulative effects: contribute to the uncovering of fossils CEQA: Environmentally Inferior (same as Alts D and E)	■ Geologic formation underlying the alignment has a higher sensitivity than Alternative B. Severity of impacts would be somewhat greater. ■ The potential for indirect effects to paleontological resources is high. ■ Cumulative effects: contribute to the uncovering of fossils CEQA: Environmentally Inferior (same as Alts C and E)	■ Geologic formation underlying the alignment has an overall higher sensitivity than Alternative B. Severity of impacts to vertebrate fossils and other paleontological resources would be somewhat greater. ■ The potential for indirect effects to paleontological resources is also high. ■ Cumulative effects: contribute to the uncovering of fossils CEQA: Environmentally Inferior (same as Alts C and D)

Table 2-12. Comparison of Gen-Tie Action Alternatives

Environmental Discipline	Alternative B (92 acres)	Alternative C (92 acres)	Alternative D (86 acres)	Alternative E (85 acres)
Fire and Fuels Management	■ Risk of wildfire related to the combustion of native plants caused by vehicles, equipment, or hazardous materials. Alternative would not generate greater impacts on fire and fuels as size difference is negligible and workforce and construction requirements identical across alternatives. ■ Cumulative impacts would not occur because construction of the Desert Sunlight gen-tie and Alternative B conductor stringing would use same crew at the same time. No additional work required for Alternative B. CEQA: Environmentally Superior	■ Alternative C would be substantially similar in its direct and indirect impacts to Alternative B ■ Cumulative effects: Project would contribute to risk of increased fire frequency CEQA: Environmentally Inferior (same as Alts D and E)	■ Alternative D would be substantially similar in its direct and indirect impacts to Alternative B ■ Cumulative effects: Project would contribute to risk of increased fire frequency CEQA: Environmentally Inferior (same as Alts C and E)	■ Alternative E would be substantially similar in its direct and indirect impacts to Alternative B ■ Cumulative effects: Project would contribute to risk of increased fire frequency CEQA: Environmentally Inferior (same as Alts C and D)
Soils and Geology	■ The larger size is negligible in terms of its impacts to soils and geology. Occurs in the same geologic setting as other alternatives, geologic hazards would present the same risks. Area not prone to erosion or involved in active sand transport ■ Cumulative impacts would not occur because construction of the Desert Sunlight gen-tie and Alternative B conductor stringing would use same crew at the same time. No additional work required for Alternative B. CEQA: Environmentally Superior	■ Occupying the same ROW and following the same path, Alternative C would be identical in its impacts to Alternative B ■ Cumulative effects: contribute to wind and water erosion during construction CEQA: Environmentally Inferior (same as Alts D)	■ Alternative D occurs in the same geologic setting as the other alternatives, geologic hazards would present the same risks. Area not prone to erosion or involved in active sand transport. Specific route would not impact soils and geology. ■ Cumulative effects: contribute to wind and water erosion during construction CEQA: Environmentally Inferior (same as Alts C)	■ Alternative E occurs in the same geologic setting as the other alternatives, so geologic hazards would present the same risks. ■ Alternative E traverses an active Aeolian sand transport corridor and could temporarily impact sand transport depending on construction methods used (berms or stabilization). ■ Cumulative effects: contribute to wind and water erosion during construction. Contribute to the regionally-significant impact to the sand transport corridor. ■ Unavoidable cumulative impact to sand transport corridor. CEQA: Environmentally Inferior (worse than Alts C and D)

Table 2-12. Comparison of Gen-Tie Action Alternatives

Environmental Discipline	Alternative B (92 acres)	Alternative C (92 acres)	Alternative D (86 acres)	Alternative E (85 acres)
Minerals and energy	■ Alternative would not generate greater impacts on mineral resources. Mineral requirements for construction would be negligibly different and the route does not impair access to mineral resources. Impacts identical across alternatives. ■ There would be no adverse cumulative effects. CEQA: Environmentally Equivalent	■ Alternative C would be identical in its impacts to Alternative B ■ There would be no adverse cumulative effects. CEQA: Environmentally Equivalent	■ Construction practices would be identical to Alternative B, and the size difference would be negligible. The specific alteration in route would not have an effect on mineral resource impacts. ■ There would be no adverse cumulative effects. CEQA: Environmentally Equivalent	■ Construction practices would be identical to Alternative B, and the size difference would be negligible. The specific alteration in route would not have an effect on mineral resource impacts. ■ There would be no adverse cumulative effects. CEQA: Environmentally Equivalent
Lands and Realty	■ Most of this alternative would be built on BLM land, County ROW, or private land, all of which allow for construction with proper permitting. ■ This alternative would traverse the Chuckwalla DWMA and CHU, but would represent a negligible fraction of allowable development in the area. ■ Would not affect agriculture. ■ Cumulative impacts would not occur because construction of the Desert Sunlight gen-tie and Alternative B conductor stringing would use same crew at the same time. No additional work required for Alternative B. CEQA: Environmentally Superior	■ Alternative C would be identical in its impacts to Alternative B. ■ This alternative would traverse the Chuckwalla DWMA and CHU, but would represent a negligible fraction of allowable development in the area. ■ Alternative C ROW would extend into the Chuckwalla DWMA along Kaiser Road. No temporary or permanent ground disturbance in planned in the DWMA. ■ Alternative D would affect existing encumbrances. ■ Cumulative effects: project would minimally contribute to the conversion of land along the I-10 corridor CEQA: Environmentally Inferior	■ Alternative would be built on BLM land within Riverside County ROW both of which allow for construction with proper permitting. ■ A small portion of the southern tip of this alternative would traverse the Chuckwalla DWMA and CHU. ■ Alternative D would affect existing encumbrances. ■ Alternative D would cross 1.5 miles of private agricultural land (A-1-20) and would require proper permitting. A portion of this land would be Williamson Act Non-Prime Agricultural Land, but transmission lines are generally consistent and not detrimental to farmland uses. ■ Cumulative effects: project would minimally contribute to the conversion of land along the I-10 corridor CEQA: Environmentally Intermediate	■ Most of this alternative would be built on BLM land, or private land, all of which allow for construction with proper permitting. ■ A small portion of the southern tip of this alternative would traverse the Chuckwalla DWMA and CHU. ■ Alternative D would affect existing encumbrances. ■ This alternative would not affect any agricultural lands. ■ Cumulative effects: project would minimally contribute to the conversion of land along the I-10 corridor ■ There would be no unavoidable adverse effects. CEQA: Environmentally Intermediate

Table 2-12. Comparison of Gen-Tie Action Alternatives

Environmental Discipline	Alternative B (92 acres)	Alternative C (92 acres)	Alternative D (86 acres)	Alternative E (85 acres)
Noise and Vibration	■ Nearest sensitive receptors are homes 500 feet away. Noise levels temporarily reach 62 dBA during construction. Increments would remain within the conditionally acceptable range. ■ Traffic would result in little noise effect in Desert Center due to the noise generated by traffic on I-10 but would result in a noticeable increase in traffic noise levels along Kaiser Road at Lake Tamarisk but would be within the conditionally acceptable range. ■ Cumulative impacts would not occur because construction of the Desert Sunlight gen-tie and Alternative B conductor stringing would use same crew at the same time. No additional work required for Alternative B. CEQA: Environmentally Superior	■ Alternative C would be nearly identical in its impacts to Alternative B. It would be slightly further from sensitive receptors (600 feet), and noise impacts would be slightly reduced compared to Alternative B. ■ Noise impacts as a result of traffic would be substantially the same as for Alternative B. ■ Cumulative effects: substantial cumulative noise effects from gen-tie construction would not occur. CEQA: Environmentally Inferior	■ Nearest sensitive receptors are homes 1,450 feet away. Noise levels would be slightly reduced compared to Alternative B. ■ Because of the increased distance between the construction of Alternative D and the truck traffic, noise levels would be slightly reduced. ■ Cumulative effects: substantial cumulative noise effects from gen-tie construction would not occur. CEQA: Environmentally Intermediate	■ Nearest sensitive receptors to this transmission route are homes approximately 900 feet away. Noise levels would be slightly reduced compared to those in Alternative B. ■ Because of the increased distance between the construction of Alternative D and the truck traffic, noise levels would be slightly reduced. ■ Cumulative effects: substantial cumulative noise effects from gen-tie construction would not occur. CEQA: Environmentally Intermediate

Table 2-12. Comparison of Gen-Tie Action Alternatives

Environmental Discipline	Alternative B (92 acres)	Alternative C (92 acres)	Alternative D (86 acres)	Alternative E (85 acres)
Public Health and Safety	■ Alternative B would not generate greater impacts on public health and safety as the size difference is negligible, and workforce and construction requirements, which play the biggest role in creating impacts, would be identical across alternatives. ■ Cumulative impacts would not occur because construction of the Desert Sunlight gen-tie and Alternative B conductor stringing would use same crew at the same time. No additional work required for Alternative B. CEQA: Roughly Environmentally Equivalent	■ Alternative C would be identical in its impacts to Alternative B ■ Cumulative effects: impacts would be substantially the same as for Alternative B ■ There would be no unavoidable adverse effects. CEQA: Roughly Environmentally Equivalent	■ Construction and transportation practices would be identical to Alternative B, and the size difference would be negligible. Route would not have an effect on public health and safety impacts. ■ Cumulative effects: impacts would be substantially the same as for Alternative B ■ There would be no unavoidable adverse effects CEQA: Roughly Environmentally Equivalent	■ Construction and transportation practices would be identical to Alternative B, and size difference would be negligible. Route would not have an effect on public safety impacts. ■ Cumulative effects: impacts would be substantially the same as for Alternative B ■ There would be no unavoidable adverse effects CEQA: Roughly Environmentally Equivalent

Table 2-12. Comparison of Gen-Tie Action Alternatives

Environmental Discipline	Alternative B (92 acres)	Alternative C (92 acres)	Alternative D (86 acres)	Alternative E (85 acres)
Recreation	■ Alternative would be 4.5 miles west of the nearest wilderness area. Noise and visual impacts would not be substantial. ■ Size of the alternative would not demand an increased workforce and would not affect use of recreational areas. ■ The alternative would not overlap or impede access to any OHV areas. ■ Cumulative impacts would not occur because construction of the Desert Sunlight gen-tie and Alternative B conductor stringing would use same crew at the same time. No additional work required for Alternative B. CEQA: Environmentally Superior	■ Alternative C would be identical in its impacts to Alternative B ■ Cumulative Effects: The alternative would require a second set of towers for the gen-tie line and would increase the effects to the diminishment of the wilderness experience CEQA: Environmentally Inferior	■ The alternative is 4 miles from the nearest wilderness area. At this distance noise and visual impacts would not be significant. ■ The required workforce would not substantially change use of recreational opportunities in the vicinity. ■ The alternative would not overlap or impede access to any OHV areas. ■ Cumulative Effects: Would contribute to the diminishment of the wilderness experience CEQA: Environmentally Inferior	■ The alternative is 2.25 miles from the nearest wilderness area. At this distance noise and visual impacts would not be significant. Alternative is approximately 0.5 miles from the southern-most point of the Desert Lily ACEC. Visual impacts of Alternative E when viewed from the southern-most point of the Desert Lily ACEC would result in adverse and unmitigable impacts ■ The required workforce would not substantially change use of recreational opportunities in the vicinity. ■ The alternative would not overlap or impede access to any OHV areas. ■ Cumulative Effects: Would contribute to the diminishment of the wilderness experience ■ Unavoidable adverse effect to the recreational experience in proximal locations to the Desert Lily ACEC CEQA: Environmentally Inferior

Table 2-12. Comparison of Gen-Tie Action Alternatives

Environmental Discipline	Alternative B (92 acres)	Alternative C (92 acres)	Alternative D (86 acres)	Alternative E (85 acres)
Social and Economic	■ The size difference between alternatives would be negligible and construction and workforce requirements would be the same across all alternatives ■ Alternative B would be almost fully on undisturbed public land potentially creating an impact to local quality of life. ■ Cumulative impacts would not occur because construction of the Desert Sunlight gen-tie and Alternative B conductor stringing would use same crew at the same time. No additional work required for Alternative B. CEQA: Environmentally Superior	■ Alternative C would be identical in its impacts to Alternative B ■ Cumulative effects: no adverse social or economic effects. CEQA: Environmentally Inferior	■ Construction and transportation practices would be identical to Alternative B and the size difference would be negligible. ■ The specific alteration in route would site a portion (1.5 miles) of Alternative D on previously disturbed private land, potentially increasing impacts to quality of life. ■ Cumulative effects: no adverse social or economic effects. ■ There would be no unavoidable adverse effects CEQA: Environmentally Inferior	■ Construction and transportation practices would be identical to Alternative B and size difference would be negligible. MWD land would be affected so this would minimize quality of life effects compared with Alt D. ■ Cumulative effects: no adverse social or economic effects. ■ There would be no unavoidable adverse effects CEQA: Environmentally Inferior
Environmental Justice	■ Construction is unlikely to disproportionately affect minority and low-income communities. ■ No contribution to cumulative effects No CEQA significance criteria for Environmental Justice	■ Alternative C would be identical in its impacts to Alternative B ■ No contribution to cumulative effects No CEQA significance criteria for Environmental Justice	■ Community makeup in the vicinity of this alternative is the same as in Alternative B, effects would be identical. ■ No contribution to cumulative effects No CEQA significance criteria for Environmental Justice	■ Community makeup in the vicinity of this alternative is the same as in Alternative B, effects of this alternative would be identical. ■ No contribution to cumulative effects CEQA: Environmentally Equivalent

Table 2-12. Comparison of Gen-Tie Action Alternatives

Environmental Discipline	Alternative B (92 acres)	Alternative C (92 acres)	Alternative D (86 acres)	Alternative E (85 acres)
Special Designations	■ Located outside of DWMA except near Red Bluff Substation. ■ Would be visible from Joshua Tree Wilderness. ■ Cumulative impacts would not occur because construction of the Desert Sunlight gen-tie and Alternative B conductor stringing would use same crew at the same time. No additional work required for Alternative B. No CEQA significance criteria for special designations.	■ ROW would extend 60 feet within the DWMA for entire north-south portion, but no ground disturbance expected. ■ Would be visible from Joshua Tree Wilderness. ■ Contributes to cumulative effects. No CEQA significance criteria for special designations.	■ Located outside DWMA except near Red Bluff Substation. ■ Would be visible from Joshua Tree Wilderness. ■ Contributes to cumulative effects. No CEQA significance criteria for special designations except agricultural and forestry resources.	■ Located within WHMA for several miles. ■ Located outside DWMA except near Red Bluff Substation. ■ Would be visible from Joshua Tree Wilderness and Desert Lily ACEC. ■ Contributes to cumulative effects. No CEQA significance criteria for special designations.
Transportation and Public Access	■ Alternative B would not result in a substantial increase in truck trips. Traffic would not reduce the existing LOS. ■ Alternative B would not result in adverse effects to air traffic obstruction and safety due to the distance between the alternative and the Desert Center Airport. Alternative B would overlap a low-level military flight path ■ Cumulative impacts would not occur because construction of the Desert Sunlight gen-tie and Alternative B conductor stringing would use same crew at the same time. No additional work required for Alternative B. CEQA: Environmentally Superior	■ Alternative C would be identical in its impacts to Alternative B ■ Cumulative effects: Trips generated by Alternative C would combine with trips from other projects to reduce the LOS, but not to a less than acceptable level. Overall, not substantially adverse. CEQA: Environmentally Intermediate	■ Alternative D would not result in a substantial increase in truck trips and would not reduce the existing LOS. ■ Alternative D would be located 0.5 miles from an airport and coordination with the FAA would be prudent but not required. ■ Cumulative effects: Trips generated by Alternative C would combine with trips from other projects to reduce the LOS, but not to a less than acceptable level. Overall, not substantially adverse. CEQA: Environmentally Inferior	■ Alternative E would not result in a substantial increase in truck trips and would not reduce the existing LOS at the intersections. ■ Alternative E would not result in adverse effects to air traffic obstruction and safety due to the distance between the alternative and the Desert Center Airport. ■ Cumulative effects: Trips generated by Alternative C would combine with trips from other projects to reduce the LOS, but not to a less than acceptable level. Overall, not substantially adverse. CEQA: Environmentally Intermediate

Table 2-12. Comparison of Gen-Tie Action Alternatives

Environmental Discipline	Alternative B (92 acres)	Alternative C (92 acres)	Alternative D (86 acres)	Alternative E (85 acres)
Visual Resource	■ Temporary visual effects due to construction equipment, materials, and workforce. ■ Alternative B would contribute to the conversion of natural desert landscapes to landscapes that substantially contrast with the natural character of the desert landscape ■ Strong long-term contrast to the existing landscape. ■ Cumulative impacts would not occur because construction of the Desert Sunlight gen-tie and Alternative B conductor stringing would use same crew at the same time. No additional work required for Alternative B. CEQA: Environmentally Superior	■ Temporary visual effects due to construction equipment, materials, and workforce. ■ Would result in a greater adverse effect from Kaiser Road because of the two transmission lines. ■ Alternative C would contribute to the conversion of natural desert landscapes to landscapes that substantially contrast with the natural character of the desert landscape ■ Strong long-term contrast to the existing landscape. ■ Cumulative effects: Only marginal contribution CEQA: Environmentally Inferior	■ Temporary visual effects due to construction equipment, materials, and workforce. ■ Would result in an adverse effect from Kaiser Road in the proposed project vicinity. ■ Strong long-term contrast to the existing landscape. ■ Cumulative effects: Only marginal contribution CEQA: Environmentally Intermediate (worse than C)	■ Temporary visual effects due to construction equipment, materials, and workforce. ■ Result in an adverse visual effect from SR-177 from a considerable distance. ■ Moderate to strong long-term contrast to the existing landscape. ■ Alternative E would contribute to the conversion of natural desert landscapes to landscapes that substantially contrast with the natural character of the desert landscape ■ Cumulative effects: Only marginal contribution CEQA: Environmentally Intermediate (worse than C and D)
Water Resources	■ Alternative B would require 6.25 afy of water for construction. Differences in water requirements for all alternatives would be insubstantial ■ Ground disturbance of Alternative B would introduce potential for soil erosion and sedimentation which could result in water quality degradation. ■ Cumulative impacts would not occur because construction of the Desert Sunlight gen-tie and Alternative B conductor stringing would use same crew at the same time. No additional work required for Alternative B. CEQA: Environmentally Superior	■ Alternative C would occupy a ROW adjacent to Alternative B and require the same amount of water for construction. ■ Ground disturbance associated with construction of Alternative C would introduce the potential for soil erosion and sedimentation which could result in water quality degradation. ■ With implementation of mitigation, the Alternative C would not contribute to cumulative effects associated with groundwater supply and recharge. CEQA: Environmentally Inferior	■ Alternative D would be slightly shorter than Alternative B but would require a similar amount of water for construction. ■ Ground disturbance associated with construction of Alternative D would introduce the potential for soil erosion and sedimentation which could result in water quality degradation. ■ With implementation of mitigation, the Alternative D would not contribute to cumulative effects associated with groundwater supply and recharge. CEQA: Environmentally Inferior	■ Alternative E would be slightly shorter than Alternative B but would require a similar amount of water for construction. ■ Ground disturbance associated with construction of Alternative E would introduce the potential for soil erosion and sedimentation which could result in water quality degradation. ■ With implementation of mitigation, the Alternative E would not contribute to cumulative effects associated with groundwater supply and recharge. CEQA: Environmentally Inferior

Table 2-12. Comparison of Gen-Tie Action Alternatives

Environmental Discipline	Alternative B (92 acres)	Alternative C (92 acres)	Alternative D (86 acres)	Alternative E (85 acres)
Solid and Hazardous Wastes	■ Alternative would not generate greater solid and hazardous waste impacts as the size difference is negligible, and workforce and construction requirements would be identical across alternatives. ■ Cumulative impacts would not occur because construction of the Desert Sunlight gen-tie and Alternative B conductor stringing would use same crew at the same time. No additional work required for Alternative B. CEQA: Environmentally Superior	■ Alternative C would be identical in its impacts to Alternative B ■ Cumulative effects: Minimal contribution CEQA: Environmentally Inferior	■ Construction and transportation practices would be identical to Alternative B and the size difference would be negligible. Route would not have an effect on solid and hazardous waste impacts. ■ Cumulative effects: Minimal contribution CEQA: Environmentally Inferior	■ Construction and transportation practices would be identical to Alternative B and size difference would be negligible. Route would not have an effect on solid and hazardous waste impacts. ■ Cumulative effects: Minimal contribution CEQA: Environmentally Inferior

Table 2-13. Comparison of Solar Facility and Gen-Tie Action Alternative Combinations

Environmental Discipline	4-B	4-C	4-D	4-E	5-B	5-C	5-D	5-E	6-B	6-C	6-D	6-E	7-B	7-C	7-D	7-E
Air Resources	1	2	2	2	1	2	2	2	1	2	2	2	1	2	2	2
Biological – Vegetation	3	4	4	5	3	4	4	5	1	2	2	2	1	2	2	2
Biological – Wildlife	3	4	4	5	3	4	4	5	1	2	2	3	1	2	2	3
Climate Change	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Cultural Resources	3	3	2	1	3	3	2	1	3	3	2	1	3	3	2	1
Paleontological Resources	1	2	2	2	1	2	2	2	1	2	2	2	1	2	2	2
Fire and Fuels Management	1	2	2	2	1	2	2	2	1	2	2	2	1	2	2	2
Soils	1	2	2	3	1	2	2	3	1	2	2	3	1	2	2	3
Minerals	2	3	3	3	2	3	3	3	1	2	2	2	1	2	2	2
Lands and Realty	2	3	3	3	2	3	3	3	1	2	2	2	1	2	2	2
Noise and Vibration	1	3	2	2	1	3	2	2	1	3	2	2	1	3	2	2
Public Health and Safety	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Recreation	1	2	2	2	1	2	2	2	1	2	2	2	1	2	2	2
Social and Economic	1	2	2	2	1	2	2	2	1	2	2	2	1	2	2	2
Environmental Justice	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Special Designations	1	2	2	3	1	2	2	3	1	2	2	3	1	2	2	3
Transportation and Access	1	2	3	2	1	2	3	2	1	2	3	2	1	2	3	2
Visual Resources	2	5	8	10	2	5	8	10	1	4	7	9	3	6	11	12
Water Resources	1	2	2	2	1	2	2	2	1	2	2	2	1	2	2	2
Solid/Hazardous Wastes	1	2	2	2	1	2	2	2	1	2	2	2	1	2	2	2

Numerical codes and shades of gray are used to indicate the severity and magnitude of direct, indirect, and cumulative environmental effects within a row (but please note that severity and magnitude of effects should not be compared *between* rows, *i.e.*, between two different environmental resources). For NEPA, a lower number and a lighter shade represents a less severe and a smaller magnitude of adverse environmental effect. Numerical codes do not mean that quantitative analysis was performed, but instead indicate relative severity within each issue area. Many impacts were evaluated qualitatively.

Under Alternative 3-A, the proposed solar facility would not be approved, and a CDCA Plan Amendment would find the site unsuitable for large-scale solar energy development. With such an amendment, the project site would remain available for other types of uses allowable on BLM land, including mining, recreation, utilities, and traditional energy development. Compared with Alternative 1-A (which is also the CEQA "no project" alternative) and Alternatives 2-A and 3-A, Alternative 6-B would result in predictable unavoidable adverse direct, indirect, and cumulative effects on environmental resources in the Chuckwalla Valley and within the project study area, as summarized in Table 2-11 and 2-12, and described in Chapter 4.

2.15 AGENCY PREFERRED ALTERNATIVE

The Council on Environmental Quality (CEQ) regulations at Title 40 Code of Federal Regulations (CFR) 1502.14(e) direct that an Environmental Impact Statement (EIS) must identify the agency's preferred alternative. The BLM has selected Alternative 7, High-Profile Reduced Footprint Solar Project, with Alternative B, Proposed Gen-Tie Line (Shared Towers), as the agency preferred alternative. Alternative 7 with Alternative B is the preferred alternative because it would be able to generate 125 to 135 MW and at least 260,000 MWh/yr of renewable energy on 1,044 acres, compared to 150 MW with 240,000 MWh/yr on 1,208 acres in the proposed solar facility. Alternative 7-B minimizes impacts resulting from ground disturbance and incorporating the use of shared facilities in an already designated transmission line ROW, while still responding to the BLM's purpose and need and partially meeting the applicant's objectives.

In order to have a complete project preference, the deciding official will choose one solar facility alternative and one gen-tie line alternative. For a complete action alternative, the deciding official could choose any one of the solar generation facility action alternatives, Alternatives 4 through 7, plus any one of the gen-tie action alternatives, Alternatives B through E.

The identification of a preferred alternative does not constitute a commitment or decision in principle, and there is no requirement to select the preferred alternative in the Record of Decision (ROD). Selection in the ROD of an alternative other than the preferred alternative does not require preparation of a supplemental EIS if the selected alternative was analyzed in the EIS, as long as the rationale for selecting the chosen alternative is explained.

An EIS must provide sufficient detail in the description of activities so that the effects of the Proposed Action may be compared to the effects of the alternatives, including the No Action Alternative (40 CFR 1502.14(b)). That comparison provides the clear basis for choice by the decision-maker. Section 2.14 provides a clear comparison among the alternatives, including among the individual solar facility alternatives, among the individual gen-tie alternatives, and among all combinations of alternatives. In addition, the alternatives are compared with the No Action Alternative and the two No Project alternatives. Section 2.16 also discloses the CEQA "environmental superiority" of alternatives; however, this information is provided for future use by CEQA Lead and Responsible Agencies, and is not required under NEPA.

2.16 CEQA ENVIRONMENTALLY SUPERIOR ALTERNATIVE

The information in this section is provided for future use by CEQA Lead and Responsible Agencies, and is not required under NEPA.

CEQA Guidelines Section 15126.6 requires an Environmental Impact Report (EIR) to consider a range of reasonable alternatives to the proposed project, or to the location of the project, that would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant impacts of the project, and evaluate the comparative merits of the alternatives. Because Riverside County intends to use this EIS in lieu of an EIR in determining whether to issue permits for the proposed gen-tie line or any of the gen-tie line alternatives, this section compares the gen-tie line alternatives evaluated in Chapter 4 of this EIS. In addition, because CEQA Guidelines Section 15278(a) requires the Lead Agency to consider the whole of an action, not simply its constituent parts, when determining whether it will have a significant environmental effect (*Citizens Assoc. For Sensible Development of Bishop Area v. County of Inyo* (1985) 172 Cal.App.3d 151), this chapter also compares the effects of the solar facility alternatives, the effects of all combinations of complete alternatives, identifies the environmentally superior action alternative, and compares this to the "CEQA no project alternative", which is a combination of Alternative 1 (No Action) and Alternative A (No Gen-Tie).

Per CEQA Guidelines 15126.6(e)(2), if the environmentally superior alternative is the "no project" alternative, an EIR must also identify an environmentally superior alternative among the other alternatives.

As demonstrated in Section 2.17.3, the overall environmentally superior alternative is the Alternative 1-A (No Action Alternative/No Gen-Tie Alternative combination). The environmentally superior alternative among the remaining action alternatives is Alternative 5-B (Reduced Footprint Alternative/Shared Gen-Tie combination).

As demonstrated in Table 2-13, the action alternative combination of solar facility Alternative 6 (Reduced Footprint Alternative) and gen-tie Alternative B (Proposed Gen-Tie Line [Shared Towers]) would result in the fewest and least severe adverse environmental effects overall. Alternative 6 combined with Alternative B, or Alternative 6-B, when compared with Alternative 1-A, which is also the CEQA "no project" alternative, would result in predictable unavoidable adverse direct, indirect, and cumulative effects on environmental resources in the Chuckwalla Valley and within the project study area. For purposes of CEQA, Alternative 1-A (the CEQA "no project" alternative) is the Environmentally Superior Alternative overall. Alternative 6-B is the CEQA environmentally superior action alternative.

2.17 ALTERNATIVES IDENTIFIED BUT ELIMINATED FROM DETAILED ANALYSIS

According to the Council on Environmental Quality's (CEQ) NEPA Regulations (40 CFR 1502.14), the alternatives section in an EIS shall rigorously explore and objectively evaluate all reasonable alternatives; however, for alternatives which were eliminated from detailed study, the EIS shall briefly discuss the reasons for their having been eliminated.

CEQ NEPA Regulations (40 C.F.R. 1502.13) require a statement "briefly specifying the underlying purpose and need to which the agency is responding in proposing the alternatives including the proposed action." As such, the ability of potential alternatives to achieve the project's purpose and need is one of the criteria used to evaluate alternatives. NEPA allows consideration of alternatives that meet "most" of the project's purpose. As noted in the findings for *Natural Resources Defense Council v. Morton* (458 F.2d 827 [D.C. Cir. 1972]), "Nor is it appropriate to disregard alternatives merely because they do not offer a complete solution to the problem." The Applicant's search for a suitable site began with an evaluation of the project's purpose and

need, which is fundamentally to construct, operate, maintain, and eventually decommission a 150-MW solar energy facility and associated interconnection transmission infrastructure to help meet federal and state renewable energy supply and greenhouse gas (GHG) emissions reduction requirements.

The applicant's objectives, presented in Section 1.3, help guide the BLM's development of alternatives. Consistent with CEQ's NEPA Regulations and applicable BLM policies (e.g., NEPA Compliance for Utility-Scale Renewable Energy ROW Authorizations (IM 2011-059; BLM 2011)), the alternatives below were not carried forward for additional analysis because they:

- Did not meet BLM's purpose and need;
- Were determined to be practically or technically infeasible (as informed by the Applicant's interests and objectives);
- Would have substantially similar effects to an alternative that is analyzed; or
- Would have resource conflicts associated with an identified alternative.

Consistent with CEQA requirements, the BLM assessed the alternatives below to determine whether each had greater environmental impacts than the project alternatives, based on knowledge of the project area.

2.17.1 Alternative to Facilitate Wildlife Movement

The U.S. Fish and Wildlife service suggested consideration of an alternative that was designed to facilitate wildlife movement in the Chuckwalla Valley. The eastern boundary of the project site contains two 40-acre parcels of BLM-managed lands that extend 0.25 miles east toward Beekley Road (Township 4S Range 15E Section 25 NENE and SESE). These two parcels further constrict the narrow movement corridor along the easternmost boundary of the project site. This corridor consists of both privately owned and BLM-managed lands between the project site and the agricultural lands further east. The corridor ranges from 0.2 miles wide to 0.5 miles wide. An alternative was suggested that would require the applicant to remove the two BLM-managed parcels from the site plan to maximize the width of this movement corridor to allow for north-south movement for wildlife, especially desert tortoise. The alternative would require a permanent conservation easement to be applied to the corridor, and for BLM to identify this area as unsuitable for future solar development to ensure that this linkage corridor remains unobstructed.

The BLM considered the suggested alternative; however, although desert tortoise habitat occurs east of the DHSP site, this habitat does not provide a movement corridor. A state-wide evaluation of habitat connectivity (Spencer et al. 2010) includes the upper Chuckwalla Valley, including the project site and surrounding areas, among areas identified as "Essential Connectivity Areas." The report describes these as follows: "Essential Connectivity Areas are placeholder polygons that can inform land-planning efforts, but that should eventually be replaced by more detailed Linkage Designs, developed at finer resolution based on the needs of particular species and ecological processes" (p. xiii). In Chapters 4 and 5, Spencer et al. (2010) provide "frameworks" for regional and local scale connectivity analysis. Following these recommendations, BLM contracted researchers involved in the state-wide evaluation to conduct regional and local analyses across the desert, including this area. Preliminary results indicate that the critical connectivity area lies to the west of the proposed project site along the east side of Eagle Mountains (Fesnock pers com).

In addition to the study addressed above, the proposed project site was analyzed for its wildlife connectivity importance. The proposed solar facility site is located roughly midway between the three mountain ranges that surround the upper Chuckwalla Valley. It is adjacent to a small (an estimated 40-acre) date palm orchard near its southeastern corner; about 1 mile north of agricultural lands on about 1,000 acres; and about 0.25 miles west of another large agricultural tract, also covering about 1,000 acres. "Corridor passage" species, such as large mammals would likely use the agricultural lands for passage. Disused agricultural lands may also be suitable for some "dweller" species, including small mammals and reptiles, but are poorly suited for desert tortoises. Thus, due to the poor quality of habitat on the proposed project site, the fragmented and disturbed landscape surrounding the site, and the low tortoise sign at the proposed project site, this area would not be considered suitable for tortoise "dwelling" in high enough densities to suggest that the project site support generational connectivity. Without the ability to support sufficient populations, this area would not be considered critical for tortoise connectivity, and therefore, may only provide some minimal support for regional wildlife connectivity.

Conclusion. Because the critical wildlife connectivity area lies west of the project and not east of the project and because the proposed project site provides only minimal support for regional connectivity, the proposed alternative would not serve the purpose of improving connectivity and was eliminated from detailed analysis.

2.17.2 Alternative Sites

Several alternative sites were considered for locating the project on public and private lands. The alternatives described below were eliminated from detailed analysis.

Private Land within the Chuckwalla Valley

Scoping comments recommended use of private lands outside of the jurisdiction of the lead agency as alternatives. Private lands within Chuckwalla Valley were considered for siting the proposed solar energy project; however, the BLM has no jurisdiction over the siting of the project on private land.

The first site that was identified, Desert Center West, is 4 miles west of the community of Desert Center. This site consists of 44 semi-contiguous parcels totaling approximately 4,000 acres and owned by 36 separate owners. The average size of the parcels is 160 acres.

The second private site eliminated from further consideration is Desert Center East, located 7.5 miles east of the community of Desert Center. This site consists of 14 parcels totaling approximately 1,800 acres. The average parcel size is 160 acres.

A third private site, Desert Center Central, lies south of the project study area, 3.5 miles northeast from the community of Desert Center, and consists of mostly disturbed agricultural land. This site is transected by an existing SCE 161 kV transmission line. Some of the land is subject to conservation contract under the Williamson Act (California Land Conservation Act of 1965), potentially preventing current solar development on those parcels. Much of this site is currently undergoing environmental review by Riverside County for use as a solar project and therefore would not be available as part of an alternative for the Applicant. The site contains 464 different parcels, owned by 228 owners.

The private land described above would have the technical potential to be developed for solar energy. However, the private land alternative would require use of semi-contiguous parcels as well as the aggregation of numerous parcels owned by numerous separate individuals. Due to the small parcels and scattered ownership, it would be difficult and expensive, if not impossible, to acquire sufficient contiguous acreage necessary to support the project, making a private land alternative technically and economically infeasible. In addition, under NEPA a private land alternative does not respond to BLM's purpose of and need for the proposed project, namely, to consider an application for the authorized use of public lands for a solar facility, which could include requesting modifications to the proposal that are within BLM's jurisdiction.

Contaminated Sites near the Devers-Palo Verde Corridor

Scoping comments recommended use of degraded and contaminated sites as alternatives. The EPA's Renewable Energy Interactive Mapping Tool was used to identify contaminated and potentially contaminated Renewable Energy Sites for PV Utility Solar facilities. There were only two sites in the general region of the Devers-Palo Verde line. A 43-acre site identified as "Square D Company" is located in Beaumont, California, 20 miles west of the Devers Substation. A second 35-acre site, "Woten Aviation Services Inc.," is located 7 miles southwest of Blythe, California, and 5 to 10 miles from the proposed Midpoint Substation. Both sites are part of the Resource Conservation and Recovery Act (RCRA) program.

As with the private land alternatives described above, it would be technically possible to develop solar energy on the contaminated sites. However, the aggregated sites would not be sufficiently large enough to support a 150 MW project. Due to the limited number of contaminated parcels near the Devers-Palo Verde Corridor, it would be impossible to acquire sufficient contiguous or semi-contiguous contaminated acreage for the project, making a contaminated land alternative technically and economically infeasible.

Alternative BLM-Administered Land

Much of the BLM-administered land in Riverside County with the highest solar energy production potential is precluded from development by special designations such as areas of critical environmental concern (ACEC), DWMA, wilderness, and other designations (BLM 2012). Additionally, from the Chuckwalla Valley east toward Blythe along the I-10 corridor, most of the BLM administered lands that are not precluded by such resource conflicts is already subject to first-in-time applications by other solar projects for ROW, which would take priority over the proposed project.

Moreover, even if the BLM-administered land along the I-10 corridor to be available, it could require a different interconnection point to the California grid from the proposed project, and therefore an alternative location would require a new interconnection application, which would re-start the CAISO interconnection process; delaying the project for several years.

Conclusion. Combined the considerations identified above mean that an alternative location on BLM-administered lands would not be economically feasible.

2.17.3 Alternate Solar Technologies

The BLM will not typically analyze an alternative for a different technology when a ROW application is submitted for a specific technology (e.g., evaluate a concentrated solar power applica-

tion for a solar photovoltaic application) because such an alternative does not respond to the BLM's purpose and need to consider an application for the authorized use of public lands for a specific renewable energy technology. However, all technologies considered by the BLM and the applicant during the pre-application process, and the rationale why they were not pursued by the agency and/or the applicant should be summarized in the NEPA document as done below (IM No. 2011-061).

Solar Trough Technology. A parabolic trough system converts solar radiation to electricity by using sunlight to heat a fluid, such as oil, which is then used to generate steam. The plant consists of a large field of trough-shaped solar collectors arranged in parallel rows, normally aligned on a north-south horizontal axis. Each parabolic trough collector has a linear parabolic-shaped reflector that focuses the sun's direct beam radiation on a linear receiver, also referred to as a heat collection element located at the focus of the parabola. Heat transfer fluid within the collector is heated to 740°F as it circulates through the receiver and returns to a series of heat exchangers where the fluid is used to generate high-pressure steam. The superheated steam is then fed to a conventional reheat steam turbine/generator to produce electricity. On average, 5 to 8 acres of land are required per MW of power generated.

Solar Power Tower Technology. The solar power tower technology converts thermal energy to electricity by using heliostat (mirror) fields to focus energy on a boiler located on power tower receivers near the center of each heliostat array. Each mirror tracks the sun during the day. Existing heliostats are 7.2 feet high by 10.5 feet wide. The solar power towers can be up to 600 feet tall with additional 10-foot-tall lightning rods. The solar power tower would receive heat from the heliostats then convert the heat into steam by heating water in the solar boilers. A secondary phase would convert the steam into electricity using Rankine-cycle reheat steam turbine electric generator housed in a power block facility at each of the plants. In general, a solar power tower power plant requires 5 to 10 acres of land per MW of power generated.

Linear Fresnel Technology. A solar linear Fresnel power plant converts solar radiation to electricity by using flat moving mirrors to follow the path of the sun and reflect its heat on the fixed pipe receivers located about the mirrors. During daylight hours, the solar concentrators focus heat on the receivers to produce steam, which is collected in a piping system and delivered to steam drums located in a solar field and then transferred to steam drums in a power block. The steam drums transferred to the power block will be used to turn steam turbine generators and produce electricity. The steam is then cooled, condensed into water, and recirculated back into the process. In general, the linear Fresnel technology requires 4 to 5 acres of land per MW of power generated.

Conclusion. Although the alternative solar generation technologies would achieve most of the project objectives, each would have different environmental or feasibility concerns. In particular, these technologies would require similar amounts of land as the project, resulting in similar impacts on biological and cultural resources, and land use, however, the all generally would have greater potential impacts on water use and visual impacts because of towers or other structural features that would be much more visible than those for a PV project. In addition, the technologies are not within the Applicant's area of expertise, and would require a new Plan of Development and all associated studies which would re-start the process; delaying the project for several years. Combined these factors mean that an alternative technology would not be economically or technically feasible.

2.17.4 Distributed and Rooftop Photovoltaics

Scoping comments recommended use of distributed and rooftop PV systems as an alternative. A distributed solar alternative would consist of PV panels that would absorb solar radiation and convert it directly to electricity (similar to the Applicant's technology and all PV technologies). The PV panels could be installed on private or publicly owned residential, commercial, or industrial building rooftops or in other disturbed areas such as parking lots or disturbed areas adjacent to existing structures such as substations. To be a viable alternative to the project, there would have needed to be sufficient newly installed panels to generate 150 MW of capacity.

California currently has over 900 MW of distributed PV systems at 94,891 individual sites (CPUC 2011). During 2010, 194 MW of distributed PV was installed in California and more than 110 MW of solar have already been installed under the CSI Program through June 14, 2011 (CPUC 2011). Yet at this rate of installation, achievement of the California Renewables Portfolio Standard would be delayed well beyond the 2020 deadline. There would have to be a significant acceleration of installation of both distributed and nondistributed generation to meet the goals defined in California's RPS. Large-scale projects play an important role in meeting these goals.

Additionally, current research indicates that development of both distributed generation and utility-scale solar power will be needed to meet future energy needs in the United States, along with other energy resources and energy efficiency technologies (NREL 2010). For a variety of reasons (e.g., upper limits on integrating distributed generation into the electric grid, costs, lack of electricity storage in most systems, and continued dependency of buildings on grid-supplied power), distributed solar energy alone cannot meet the goals for renewable energy development. Ultimately, both utility-scale and distributed generation solar power will need to be deployed at increasing levels, and the highest penetration of solar power overall will require a combination of both types (NREL 2010).

Therefore, alternatives involving distributed generation were eliminated from detailed analysis because it does not respond to the BLM's purpose and need for the Proposed Action, which is to respond to the Applicant's application for a ROW grant to construct, operate, and decommission a solar photovoltaic facility on public lands in compliance with FLPMA, BLM ROW regulations, and other federal applicable laws consistent with the Energy Policy Act of 2005's goal that the Secretary of the Interior approve 10,000 MW of non-hydropower renewable energy projects located on public lands by 2015. The objectives cannot be achieved on that timetable through distributed generation systems. Therefore, BLM's purpose and need for agency action in this EIS is focused on the siting and management of utility-scale solar energy development on public lands. Furthermore, the BLM has no authority or influence over the installation of distributed generation systems, other than lands that it administers. Based on the foregoing, this alternative was not carried forward for further review.

2.17.5 Alternate Renewable Technologies

Wind Energy. Wind carries kinetic energy that can be utilized to spin the blades of a wind turbine rotor and an electrical generator, which then feed AC into the utility grid. Most state-of-the-art wind turbines operating today convert 35 to 40 percent of the wind's kinetic energy into electricity. A single 1.5 MW turbine operating at a 40 percent capacity factor generates 2,100 megawatt-hours annually. Wind turbines currently being manufactured have power ratings

ranging from 250 watts to 5 MW, and units larger than 7 MW in capacity are now under development (EERE 2008). The technology is well developed and can be used to generate significant amounts of power. California has 3,179 MW of installed wind capacity as of 2010 (AWEA 2011).

The use of wind energy at the project locations may be feasible at the scale of the project but it would not eliminate significant impacts caused by the project; specifically, there would still be impacts on biological and cultural resources, and visual effects would be greater than with the proposed project. Furthermore, the project site is not viable for commercial wind energy production (BLM 2005).

Geothermal Energy. Geothermal technologies use steam or high-temperature water obtained from naturally occurring geothermal reservoirs to drive steam turbine/generators. There are vapor dominated resources (dry, super-heated steam) and liquid-dominated resources where various techniques are used to extract energy from the high-temperature water. Geothermal plants account for 5 percent of California's power and range in size from under 1 MW to 200 MW. California is the largest geothermal power producer in the United States, with about 1,800 MW installed capacity; in 2007, 13,000 gigawatt hours of electricity were produced in California (CEC 2008). Geothermal plants provide highly reliable baseload power, with capacity factors from 90 to 98 percent.

The use of geothermal energy at the project locations would be unfeasible as there are no geothermal reservoirs at this location.

Biomass Energy. Biomass generation creates electricity by burning organic fuels in a boiler to produce steam, which then turns a turbine. Biomass can also be converted into a fuel gas such as methane and burned to generate power. Wood is the most commonly used biomass for power generation. Major biomass fuels include forestry and mill wastes, agricultural field crop and food processing wastes, and construction and urban wood wastes. Several techniques are used to convert these fuels to electricity, including direct combustion, gasification, and anaerobic fermentation. Biomass facilities do not require the extensive amount of land required by the other renewable energy sources discussed, but they generate much smaller amounts of electricity. Most biomass plant capacities are in the 3 to 10 MW range. Unlike other renewables, the locational flexibility of biomass facilities would reduce the need for significant transmission investments. California has a total of 968 MW of existing and planned biomass generation (CEC 2008).

Conclusion. The use of biomass energy at the project location would be unfeasible as there are no biomass sources at or nearby this location.

2.17.6 Non-Renewable Technologies

Natural Gas. Natural gas power generation accounts for 22 percent of all the energy used in the United States and comprises about 46 percent of the power generated in California (CEC 2009). Natural gas power plants typically consist of combustion turbine generators, heat recovery steam generators, a steam turbine generator, wet or dry cooling towers, and associated support equipment. An interconnection with a natural gas pipeline, a water supply, and electric transmission are also required.

Coal. Coal-fired electric generating plants are the cornerstone of America's central power system. Traditional coal-fired plants generate large amounts of greenhouse gases. New "clean coal technology" includes a variety of energy processes that reduce air emission and other pollutants from coal-burning power plants. The Clean Coal Power Initiative is providing government co-financing for new coal technologies that help utilities meet the Clear Skies Initiative to cut sulfur, nitrogen, and mercury pollutants by nearly 70 percent by 2018.

In 2008, 18.2 percent of the energy used in California came from coal fired sources(CEC 2009). The in-state coal-fired generation includes electricity generated from out-of-state, coal-fired power plants owned by and reported by California utilities. In 2006, California enacted SB 1368 (Perata, Chapter 598, Statutes of 2006), which prohibits utilities from making long-term commitments for electricity generated from plants that create more carbon dioxide (CO_2) than clean-burning natural gas plants (CEC 2009).

Nuclear Energy. Generation from nuclear power plants represented 44,268 gigawatt-hours of California's total system power in 2008 (CEC 2009). However, California has a moratorium on building new nuclear power plants until a means for the permanent disposal or reprocessing of spent nuclear fuel has been demonstrated and approved in the United States. In 1978, the Energy Commission found that neither of these conditions had been met. In 2005, the Energy Commission reaffirmed these findings and also found that reprocessing remains substantially more expensive than waste storage and disposal and has substantially adverse implications for nuclear nonproliferation efforts. (CEC 2009) It should also be noted that the permitting of new nuclear facilities in California is currently illegal, so this technology also is eliminated as infeasible.

Conclusion. Alternative methods of generating electricity, such as natural gas, coal, and nuclear energy, were eliminated from detailed discussion because they would be too great a departure from the application to be considered a modification of the Applicant's proposal, and so are inapplicable under NEPA. These alternative generation technologies would not respond to the BLM's purpose and need for the Proposed Action, which is to respond to the Applicant's application for a ROW grant to construct, operate, and decommission a solar photovoltaic facility on public lands in compliance with FLPMA, BLM ROW regulations, and other federal applicable laws. Additionally, none of these alternative methods of generating electricity is within the Applicant's area of expertise; therefore, it would not likely be technically or economically feasible for the Applicant to implement them.

2.17.7 Conservation and Demand-side Management

Conservation and demand-side management consist of a variety of approaches to reduction of electricity use, including energy efficiency and conservation, building and appliance standards, and load management and fuel substitution. The California Public Utilities Commission (CPUC), with support from the Governor's Office, the Energy Commission, and the California Air Resources Board, among others, adopted the California Long-Term Energy Efficiency Strategy Plan for 2009 to 2020 in September 2008 (CPUC 2008). The plan is a framework for all sectors in California including industry, agriculture, large and small businesses, and households. Major goals of the plan include:

- All new residential construction will be zero net energy by 2020;
- All new commercial construction will be zero net energy by 2030;

- Heating, ventilation, and air conditioning industries will be re-shaped to deliver maximum performance systems;
- Eligible low-income customers will be able to participate in the Low Income Energy Efficiency program and will be provided with cost-effective energy efficiency measures in their residences by 2020.

As noted in the California Energy Commission *2009 Integrated Energy Policy Report*, California's renewable energy goals are based on a percentage of retail sales of electricity. Reducing overall electricity demands means fewer retail sales and therefore less renewable energy that must be generated and fewer renewable plants will need to be built. However, conservation and demand-side management will not itself provide the renewable energy required to meet the California renewable energy goals.

Conclusion. Conservation and demand-side management are eliminated from detailed discussion because they would be too great a departure from the application to be considered a modification of the Applicant's proposal, and so are inapplicable under NEPA. This alternative would not respond to the BLM's purpose and need for the Proposed Action, which is to respond to the application for a ROW grant to construct, operate, and decommission a solar photovoltaic facility on public lands in compliance with FLPMA, BLM ROW regulations, and other federal applicable laws. Conservation and demand-side management would also not respond to the purpose and need to address the Energy Policy Act of 2005's goal for the Secretary of the Interior to approve 10,000 MW of non-hydropower renewable energy projects located on public lands. Moreover, the BLM has no jurisdiction over conservation and demand-side management programs. Finally, accounting for population growth and the associated increasing in the demand for energy, there is no evidence that conservation and demand-management alone would be sufficient to address all of California's energy needs.[4]

2.17.8 Underground Installation of gen-tie line

An underground installation of the gen-tie line would install the line underground rather than overhead. This was considered because the overhead lines would be highly visible. Underground transmission lines at 230 kV have been installed or are planned to be installed in California by Pacific Gas & Electric Company (its Northeast San Jose, Tri-Valley, and Jefferson-Martin projects) and by San Diego Gas & Electric Company (its approved Otay Mesa and Sunrise Powerlink projects). These lines, or portions of them, have been installed underground either due to congested urban areas where there is inadequate space for overhead high-voltage lines, or (in the case of Tri-Valley and Jefferson-Martin) to reduce visual impacts in scenic areas.

Environmental Impacts. While underground lines would reduce the visual effects of the transmission lines, they have several disadvantages with respect to the environmental impacts that would occur during construction. Substantial ground disturbance is required to install the trench and cables for underground transmission lines. Of the total length of gen-tie line Alternatives (approximately 30 miles combined for all three route alignments) illustrated in Figure 2-1 in Appendix A, about 6 miles would parallel a paved roadway (Kaiser Road, parallel to the Alterna-

[4] 2011 Integrated Energy Policy Report Lead Commissioner Draft (December 2011) discusses cost-effective energy efficiency in Chapter 2.

tive B&C alignment). This 6-mile segment could likely be installed within the paved portion of this road with minimal disturbance of desert habitat, but the remainder of the route would be installed in dirt roads or in undisturbed desert.

The trench for a 230-kV line could vary from about 3 feet to 6 feet wide depending on the configuration of the cables within the trench. A construction work area from 25 to 50 feet wide is required parallel to the trench for construction equipment, resulting in temporary disturbance to habitat. In unpaved areas, the area above the trench (generally a 20- or 25-foot-wide road) would have to remain clear and accessible for the life of the project, a permanent loss of habitat.

The environmental impacts of installing underground transmission lines have been defined in detail in several completed CPUC environmental impact reports (EIRs) including the following, all of which included underground segments that have been constructed:

- PG&E Jefferson-Martin 230 kV Transmission Project (Application A.02-09-043, approved in CPUC Decision D.04-08-046);
- PG&E Tri-Valley Capacity Increase Project (Application A.99-11-025, approved in CPUC Decision D.01-10-029);
- SDG&E Otay Mesa Power Purchase Agreement Transmission Project (Application A.04-03-008, approved in CPUC Decision D.05.06.061); and
- SDG&E Sunrise Powerlink Transmission Project (Applications A.05-12-014 and A.06-08-010, approved in CPUC Decision D.08-12-058).

Other CPUC EIRs have evaluated underground transmission line segment alternatives and rejected them for a variety of reasons, including their potential for environmental impacts (e.g., Miguel-Mission 230 kV #2 project, A.02-07-022, Final EIR, June 2004). As explained in those documents, the impacts resulting from construction or operation of underground transmission lines include the following:

- Biological resources would be affected by loss of habitat due to construction required outside of paved roadways. The loss of desert tortoise habitat, and habitat for other species, would be substantially greater than that lost for overhead transmission line construction.
- There would be a substantially greater likelihood of encountering subsurface cultural resources.
- Air emissions would be greater due to the construction equipment required to construct a continuous trench, the dust from trenching and more trucks driving on unpaved roads, and increased truck trips to haul trench spoils and import thermal back-fill.
- Construction noise would be increased, both in time and severity.
- Traffic impacts would be greater because additional vehicles would be required to haul trench spoils and import back-fill. Construction in Kaiser Road would require closure of at least one lane.

Cost, Expansion, and Maintenance. First Solar provided a report entitled "Gen-Tie Undergrounding Report; Desert Sunlight Solar Farm Project" (First Solar 2011) which analyzed the costs associated with undergrounding the transmission line for that Project. The costs identified in that report would be similar for the DHSP's gen-tie line. This report, which summarized underground installations in the U.S. and presented a potential design for a First Solar under-

ground gen-tie, identified several concerns that would also be relevant to the DHSP project, related to cost, limits on expansion, and accessibility, as described below.

Cost is also a major concern to the developer, since construction of underground transmission lines costs up to 8.5 times more than overhead lines. Increased costs would negatively affect a project's financial viability, especially when coupled with the considerable technical and environmental risks involved with underground transmission line design.

The First Solar report also stated that expansion of the capacity of a transmission line, or addition of future circuits, would be more difficult if underground lines were installed. The addition of future circuits could be accommodated by increasing cable spacing or constructing a larger duct bank (leaving empty spaces for future cables), or by constructing a parallel duct bank separated by an adequate distance to allow heat dissipation. However, these approaches would further increase construction cost.

Underground transmission lines are less accessible than overhead lines, so line maintenance is more challenging. It is more difficult to know where an outage has occurred, so outages of an underground line can be more time-consuming both to find the problem and to repair it. Third-party construction damage to the buried facilities is also a concern, as it is for underground utility infrastructure of all kinds.

Conclusion. BLM evaluated the information included in First Solar's report and determined that, based on the Agency's own experience, expertise, and research, constructing the adjacent Desert Sunlight Solar Farm's gen-tie lines underground would not be feasible. Although the technology for underground transmission lines is available and has been used to reduce visual impacts and to avoid overhead construction through congested areas by major utilities in California, the increased environmental impacts that would result to other resource areas does not justify the construction of underground lines. Those the same conclusions hold true for the DHSP. Specifically, the lack of adequate paved roadways for installation of the gen-tie lines serving the DHSP would result in substantially greater impacts to biological resources, cultural resources, air quality, and noise than for the overhead gen-ties. The additional costs and technical risks associated with underground lines also make it undesirable under these conditions. As a result, the underground gen-tie alternative has been eliminated from detailed consideration.

2.17.9 Transmission Corridor Alternative

The gen-tie alternatives are located within the CDCA Planning area in Multiple Use Classes L and M. Within Multiple Use Classes L and M, the CDCA Plan 1980, as amended allows for transmission lines above 161 kV within designated corridors. Designated planning corridors were identified in the CDCA Plan 1980, as amended. Planning corridors are a tool for guiding the necessary detailed planning and environmental assessment work which will continue to be required where a right-of-way is requested. Sites associated with power generation or transmission not identified in the Plan will be considered through the Plan Amendment process.

If a new transmission line is proposed that is above 161 kV, it will be considered through the Plan Amendment process. The BLM could either amend the CDCA Plan to designate a new corridor or the CDCA Plan could be amended to 'allow' the individual transmission line outside a corridor. A new joint-use corridor varies in width from two to five miles and would address new

electrical transmission towers and cables of 161 kV or above, pipelines with diameters greater than 12 inches, coaxial cables for interstate communications, and major aqueducts or canals.

Conclusion. The BLM considered designation of a joint-use corridor from the proposed solar facility site to the designated utility corridor that runs along the I-10. This would be a 5.4-mile long corridor. However, as noted in the CDCA Plan 1980, as amended, utility planning corridors specifically address utility facilities constructed for the purposes of bulk transfer of electricity and other commodities. Because the transmission line required for the DHSP project would be used for one solar project, sufficient bulk energy transfer would not occur to warrant the designation of a utility corridor.

2.17.10 Higher Mounted Panels Alternative

A commenting agency recommended that the EIS include an alternative that would mount panels at a height to eliminate the need for vegetation clearing and would maintain natural vegetation. While mitigation to protect, maintain, and restore native vegetation is described in Section 4.3, no alternative PV technology, mounting system, or mounting height was identified by the EIS preparers that could achieve permanence of appreciable amounts of native vegetation on the solar project site. Even with PV panels mounted at a height to eliminate vegetation clearing, they would impact the desert environment due to substantial shading of the site by such panels.

Conclusion. Based on the foregoing, this alternative was not carried forward.

CHAPTER 3 – AFFECTED ENVIRONMENT

3.1 INTRODUCTION AND OVERVIEW

This chapter describes the affected environment (environmental setting) relevant to the assessment of the effect of the Desert Harvest Solar Project (DHSP). It provides information on the physical, biological, cultural, socioeconomic, and other resources that have the potential to affect or be affected by activities related to implementing the proposed project or alternatives that are described in detail in Chapter 2. These resources include those that occur within the project study area, as defined for each resource. More detailed information for some resources (noise, air quality and greenhouse gases, biological resources, water supply, and traffic) is provided in the technical reports or supporting information provided as technical appendices to this EIS. For the purpose of this document, the environmental setting, or "baseline," used for the impact analysis reflects conditions at the commencement of environmental analysis in September 2011. This baseline includes partial ongoing construction of the adjacent Desert Sunlight Solar Farm Project, for which Phase 1A was under construction at the commencement of analysis for this EIS. Phase 1A of the Desert Sunlight Solar Farm Project is shown on Figure 3.1-1 in Appendix A.

The following resources are evaluated in this EIS:

- Air resources
- Biological resources – vegetation
- Biological resources – wildlife
- Climate change
- Cultural resources
- Paleontological resources
- Fire and fuels management
- Soils and geology
- Energy and minerals
- Lands and realty
- Public health and safety
- Recreation
- Social and Economic Setting
- Environmental justice
- Special designations
- Transportation and public access
- Visual resources
- Water resources
- Wastes – solid and hazardous
- CDCA plan conformance
- Native American concerns

Resources that do not exist in the project study area and, therefore, do not warrant analysis in the EIS and proposed Plan Amendment include:

- Grazing
- Wild Horses and Burros

For each resource, a discussion of applicable plans, policies, and regulations is provided in this chapter. All applicable federal, state, and local laws, regulations, and policies are summarized and their applicability to the project explained. It is assumed in the analysis that the Applicant (EDF) will fully comply with all laws and regulations applicable to project actions, will prepare any required plans, and will obtain any necessary permits or waivers.

The environmental setting (existing conditions) of the project study area is described using information from literature reviews, fieldwork, and input from appropriate federal, state, and local agencies. The resource sections in this chapter define and describe a resource-specific study area or "region of influence", which serves to define the geographic boundaries of the area for which

baseline information is presented. Defining these conditions (such as existing air quality, biological and cultural resources, water resources, and recreational opportunities) allows for appropriate characterization and anticipation of the project's impacts and forms the basis for the environmental analysis.

Sources for the literature reviews include published technical reports, internet resources, data from government sources, aerial photographs, and information provided by the Applicant. Where existing information regarding the project study area was insufficient or outdated, or where surveys or studies were specifically required by jurisdictional agencies, surveys and studies were conducted to determine the existing environmental conditions. This work included producing original studies for biological and cultural resources, air quality, transportation and public access, and visual resources.

As discussed in Chapter 1, this EIS provides the required environmental review under the National Environmental Policy Act (NEPA). In addition, because this project will require permits from the County of Riverside, this EIS was written to both comply with NEPA and satisfy the California Environmental Quality Act (CEQA) requirements for those project components that require entitlements from state and local agencies, in accordance with CEQA Guidelines Section 15221. Due to the similarity in information requirements for both NEPA and CEQA, the affected environment described in this chapter serves both purposes.

3.2 AIR RESOURCES

This section describes the environmental and regulatory settings associated with the construction and operation of the proposed project and its alternatives with respect to air resources in the project study area. The project study area for air resources includes the Mojave Desert Air Basin, which encompasses activities from the proposed project and alternatives, as this is the limit of the area likely to be affected by the Desert Harvest Solar Project (DHSP) with respect to air resources.

The term "pollutant emissions" refers to the amount (mass) of a contaminant released into the atmosphere by a source. Emission rates are the quantity of pollutants emitted during a specified increment of time or during a specified increment of emission source activity. Typical measurement units for emission rates on a time basis include pounds per hour, pounds per day, or tons per year. Typical emission factors on a source activity basis include pounds per thousand gallons of fuel burned, pounds per ton of material processed, and grams per vehicle mile of travel.

The term "ambient air quality" refers to the atmospheric concentration of a contaminant in a specified volume of air, and this is determined at a particular geographic location that is usually some distance from the source of the relevant emissions. Ambient air quality data are generally reported as a mass per unit volume (e.g., micrograms per cubic meter of air) or as a volume fraction (e.g., parts per million by volume). The ambient air quality levels actually measured at a particular location are determined by the interactions among three groups of factors:

- Emissions: the types, amounts, and locations of pollutants emitted into the atmosphere;
- Meteorology: the physical processes affecting the transport, mixing, and removal of pollutants; and
- Chemistry: any chemical reactions that transform pollutant emissions into other chemical substances.

Air pollutants are often characterized as being "primary" or "secondary" pollutants. Primary pollutants are those emitted directly into the atmosphere (such as carbon monoxide, sulfur dioxide, lead particulates, and hydrogen sulfide). Secondary pollutants are those (such as ozone, nitrate particles, or sulfate particles) formed through chemical reactions in the atmosphere; these chemical reactions usually involve primary pollutants, normal constituents of the atmosphere, and other secondary pollutants. Compounds that react to form secondary pollutants are referred to as reactive pollutants or precursors. Some air pollutants (such as many organic gases and respirable particulate matter) are a combination of primary and secondary pollutants.

3.2.1 Applicable Plans, Policies, and Regulations

Air Quality Planning Programs

Since 1970, the federal Clean Air Act (CAA) has required each state to identify areas that have ambient air quality in violation of federal standards. States are required to develop, adopt, and implement a SIP to achieve, maintain, and enforce federal ambient air quality standards in these nonattainment areas. The SIP process includes specific deadlines for achieving the federal ambient air quality standard once a nonattainment designation has been made. Deadlines for achieving the federal air quality standards vary according to air pollutant and the severity of existing air quality problems. The SIP must be submitted to and approved by EPA. SIP ele-

ments are developed on a pollutant-by-pollutant basis whenever one or more air quality standards are being violated. Development of SIP documents is formally the responsibility of the relevant state air quality management agency, and in California, local/regional air quality management agencies and local/regional transportation planning agencies assume the primary responsibility for SIP document preparation, with state oversight and approval.

The status of areas with respect to each federal ambient air quality standard is typically categorized as nonattainment (in violation of a national standard), attainment (in compliance with a national standard), unclassifiable, or attainment/unclassified. For most air pollutants, initial federal status designations are made using only two categories: nonattainment or unclassifiable/attainment. The unclassified designation includes attainment areas as well as areas that are expected to attain the standards although monitoring data are lacking. Areas that have been reclassified from nonattainment to attainment are automatically considered "maintenance areas."

The California Clean Air Act of 1988 created a state air quality planning program similar to the federal SIP process for areas that violate state ambient air quality standards. CARB designates areas as attainment, nonattainment, or unclassified with respect to each of the state ambient air quality standards. Local air quality management agencies, in consultation with the relevant council of governments, are responsible for preparing and updating state air quality management plans for pollutants other than particulate matter. CARB is responsible for air quality planning efforts addressing the state ambient air quality standards for particulate matter (PM10 and PM2.5). The state air quality planning process differs from the federal SIP process in one respect: while there are requirements to show on-going improvement in air quality, there are no specific deadlines for achieving state air quality standards.

The geographic basis for attainment status designations varies and can be based on political boundaries; metropolitan statistical area boundaries; areas defined by township and range; areas defined by highways or topographic features; or areas defined by a combination of these types of boundaries. The largest geographic units used for attainment status designations are called air quality control regions (EPA terminology) or air basins (CARB terminology). Air quality control regions and air basins are typically defined by a combination of political boundaries (often county boundaries) and topographic features that influence meteorological conditions and pollutant transport.

Riverside County has adopted an air quality element in the County General Plan. The air quality element includes policies supporting regional cooperation with other jurisdictions to improve air quality; requiring compliance with federal, state, and regional air quality regulations; encouraging programs to reduce vehicle travel; encouraging energy conservation in urban land uses; and encouraging development patterns that improve the County's jobs/housing balance.

Air Quality Standards

Federal and state air quality management programs use two distinct management approaches:

- The State Implementation Plan (SIP) process of setting ambient air quality standards for acceptable health-based exposure to air pollutants, conducting monitoring programs to identify locations experiencing air quality problems, and then developing programs and regulations designed to reduce or eliminate those problems; and

- The Hazardous Air Pollutant (HAP) regulatory process identifying specific chemical substances that are known to be hazardous to human health, and then setting emission standards to regulate the amount of those substances that can be released by specific facilities or types of equipment.

Criteria Air Pollutants

Air quality programs based on ambient air quality standards typically address air pollutants that are produced in large quantities by widespread types of emission sources and which are of public health concern. The U.S. Environmental Protection Agency (EPA) defines ambient air quality standards for several different pollutants, which often are referred to as criteria pollutants (ozone, nitrogen dioxide, carbon monoxide, sulfur dioxide, and particulate matter). Standards for particulate matter cover two size fractions: inhalable particulate matter (PM10) and fine particulate matter (PM2.5). Federal ambient air quality standards are based primarily on evidence of acute and chronic health effects. Federal ambient air quality standards apply to outdoor locations to which the general public has access.

California has adopted state-level ambient air quality standards in different forms than the comparable federal standards or to address pollutants that are not covered by federal standards. Most state ambient air quality standards are based on health effects data, but they can also reflect other considerations such as protection of crops, protection of materials, or avoidance of nuisance conditions (such as objectionable odors). Table 3.2-1 summarizes ambient air quality standards adopted by EPA and the California Air Resources Board (CARB).

Table 3.2-1. National and California Ambient Air Quality Standards

Pollutant	Averaging Time	California Standard	National Standard
Ozone (O3)	1-hour	0.09 ppm	—
	8-hour	0.070 ppm	0.075 ppm
Respirable particulate matter (PM10)	24-hour	50 μg/m^3	150 μg/m^3
	Annual	20 μg/m^3	—
Fine particulate matter (PM2.5)	24-hour	—	35 μg/m^3
	Annual	12 μg/m^3	15 μg/m^3
Carbon monoxide (CO)	1-hour	20 ppm	35 pm
	8-hour	9.0 ppm	9.0 ppm
Nitrogen dioxide (NO_2)	1-hour	0.18 ppm	0.100 ppm*
	Annual	0.030 ppm	0.053 ppm
Sulfur dioxide (SO_2)	1-hour	0.25 ppm	0.075 ppm*
	3-hour	—	0.5 ppm
	24-hour	0.04 ppm	0.14 ppm
	Annual	—	0.03 ppm

Source: CARB 2011a.
ppm = parts per million; μg/m^3 = micrograms per cubic meter; "—" = no standard.
Note:
*The new federal 1-hour NO_2 and SO_2 standards are based on the 98th and 99th percentile of daily hourly maximum values, respectively.

Hazardous Air Pollutants

Air quality programs based on regulation of other hazardous substances typically address chemicals used or produced by limited categories of industrial facilities. Programs regulating HAPs focus on: substances that alter or damage the genes and chromosomes in cells (mutagens); substances that affect cells in ways that can lead to uncontrolled cancerous cell growth (carcinogens); substances that can cause birth defects or other developmental abnormalities (teratogens); substances with serious acute toxicity effects; and substances that undergo radioactive decay processes, resulting in the release of ionizing radiation. Federal air quality management programs for HAPs focus on setting emission limits for particular industrial processes rather than setting ambient exposure standards. California has established exposure guidelines for various hazardous air pollutants, and toxic air contaminants are regulated as part of the permit review process for stationary sources.

Visibility

The federal CAA requires EPA to administer programs so that all areas of the country achieve the federal ambient air quality standards within various specified time frames. For attainment areas that already meet the federal ambient air quality standards, the federal Prevention of Significant Deterioration (PSD) permit program includes a three-tier classification defining the extent to which baseline air quality conditions can be degraded. Class I areas have the smallest allowable air quality deterioration limits. Class II areas allow greater deterioration of air quality but must maintain air quality conditions better than the federal air quality standards. Class III areas allow deterioration of air quality to the level of the federal ambient air quality standards. There are currently 163 Class I areas designated in the United States, with 29 Class I areas in California. All areas outside Class I areas are currently designated as Class II areas because there are no Class III areas. The Class I area closest to the proposed project and alternatives is the Joshua Tree National Park (JTNP), 1.8 miles from the solar facility. Visibility is considered an important air quality value to be protected within JTNP. There are no other Class I areas within 62 miles (100 kilometers) of the solar facility. The San Jacinto Wilderness west of Palm Springs is about 72 (116 kilometers) miles from the solar facility, and the San Gorgonio Wilderness in San Bernardino County is about 85 (137 kilometers) miles northwest of the solar facility.

The federal CAA requires EPA to protect visibility conditions within the federal Class I areas. The CAA also requires development of programs to remedy existing visibility impairment in Class I areas if that visibility impairment results from man-made air pollution. EPA has identified two general types of visibility impairment at Class I areas:

- Impairment due to smoke, dust, colored gases, or layered haze attributable to individual stationary sources; and
- Impairment due to widespread, regionally homogeneous haze resulting from the cumulative emissions of varied stationary, mobile, and area sources in a region.

The PSD permit program addresses visibility impairment from nearby stationary sources. Regional haze impacts resulting from cumulative emissions in a region are being addressed through new SIP planning requirements. Visibility impairment, whether from stationary sources or from other sources, must be addressed under the regional haze program.

Monitoring of aerosol and other regional haze parameters occurs through a cooperative of federal agencies and the Inter-agency Monitoring of Protected Visual Environments (IMPROVE) program, which tracks visibility conditions in or near Class I areas across the country. There are 18 active IMPROVE monitoring sites in California, including one in JTNP.

Other air quality related values (AQRV) include deposition of pollutants to soil or water. Deposition of compounds including nitrogen and sulfur is monitored in JTNP by the Clean Air Status and Trends Network (CASTNET). At the JTNP site, total nitrogen deposition rates have been in a downward trend since 1996, and total sulfur deposition rates have been relatively steady over the same timeframe.

Regulatory Considerations

In general, states or tribal authorities take primary responsibility for enforcing most federal stationary source emission standards and new source review requirements, with EPA exercising formal review and oversight responsibilities. Many states have independent air quality permit programs that extend to emission sources not covered by federal requirements. State air quality permit requirements generally are integrated with federal requirements, resulting in a consolidated permit program. Under most consolidated permit programs, basic state permit requirements apply to all sources that are not specifically exempted. Additional requirements (including EPA review of the permit) become applicable if stationary sources exceed various size or emission thresholds.

In California, air quality regulation is a joint responsibility between CARB and local air quality management agencies. Local agencies are either a single county or a multi-county agency, typically called an Air Pollution Control District (APCD) or an Air Quality Management District (AQMD). APCDs and AQMDs have primary responsibility for most air quality regulatory programs, with CARB retaining oversight responsibilities. CARB directly implements statewide regulatory programs for motor vehicles, portable equipment, and HAPs. Two different AQMDs have jurisdiction over portions of Riverside County. The South Coast Air Quality Management District (SCAQMD) has jurisdiction over most of Riverside County and the Mojave Desert Air Quality Management District (MDAQMD) has jurisdiction over the far eastern portion of Riverside County.

The project study area is entirely under the jurisdiction of the SCAQMD. Most construction equipment items are classified as mobile sources, and thus are exempt from stationary source permit requirements. But other portable and stationary equipment such as generators, compressors, pumps, welders, diesel pile driving hammers, concrete batch plants, sand and gravel screening equipment, rock crushers, wood chippers, and tub grinders are potentially subject to SCAQMD permit requirements. SCAQMD Rule 219 list equipment types that are typically exempt from permit requirements. Equipment normally exempt from stationary source permit requirements includes:

- Equipment using a piston type internal combustion engine (typically using diesel, gasoline, or compressed gas fuels) that has a manufacturer rating of 50 horsepower or less;
- Equipment using a gas turbine engine that has a maximum heat input rate of 2,975,000 British thermal units (BTU) or less;
- Concrete mixers with a working capacity of one cubic yard or less;

- Portable equipment registered under the CARB statewide portable engine registration that remains at one fixed location for no more than 12 months; and
- Rental equipment located at one facility for no more than 12 months when the equipment owner has a valid AQMD permit or has registered the equipment under the statewide portable engine registration program.

The CARB statewide portable engine registration program is a voluntary program that establishes uniform emission limits and other requirements for eligible equipment. CARB-registered portable equipment items are exempt from local air district regulations and permit requirements as long as the equipment does not remain at a single fixed location (other than an equipment storage area) for more than 12 months (CARB 2011b). Portable equipment that is not registered under the statewide program or that remains at a single fixed location for 12 consecutive months or more is subject to local air district regulations and permit requirements unless it qualifies for exemption under other provisions of local air district rules and regulations. CARB-registered portable equipment remains exempt from air district permit requirements if it is relocated periodically within a project site for legitimate operational purposes, and is not at any single fixed location for 12 consecutive months.

In addition to possible permit requirements for some equipment used during project construction, the SCAQMD has adopted other regulations that affect facility construction and operation. Construction activities would be subject to fugitive dust control requirements (Rule 403). Rule 403 prohibits creation of dust plumes that are visible beyond the property line of the emission source, and requires all "active operations" (construction/demolition activities, earthmoving activities, heavy or light duty vehicle movements, or creation of disturbed surface areas) to implement applicable best available control measures as defined in the Rule. Best available dust control measures outlined in SCAQMD Rule 403 are summarized in Table 3.2-2. Enhanced dust control requirements apply if the project is considered a large operation. A large operation under Rule 403 is any active operations on property which contains 50 or more acres of disturbed surface area, or any earthmoving operation with a daily throughput volume of 5,000 cubic yards or more three or more times during the most recent 365-day period.

Table 3.2-2. Best Available Dust Control Measures Required by SCAQMD Rule 403

Dust Source	Required Control Measures	Guidance
Mechanical or manual demolition	• Stabilize wind-erodible surfaces to reduce dust. • Stabilize surface soil where support equipment and vehicles will operate. • Stabilize loose soil and demolition debris. • Comply with AQMD Rule 1403 (asbestos from demolition and renovation).	• Apply water in sufficient quantities to prevent visible dust plumes.
Cut and fill	• Water soils before cutting and filling. • Stabilize soils during and after cutting and filling.	• For large sites, water with sprinklers or water trucks and allow time for water to penetrate. • Water soils to depth of cut before subsequent cuts.
Earthmoving	• Water to depth of proposed cuts. • Reapply water as necessary to maintain dampness in soils and to ensure that visible dust does not extend more than 100 feet in any direction. • Stabilize soils once earthmoving is complete.	• Grade each project phase separately, timed to coincide with construction phase. • Install upwind fencing to reduce material movement on-site. • Apply water or a stabilizing agent in sufficient quantity to prevent the generation of dust.

Table 3.2-2. Best Available Dust Control Measures Required by SCAQMD Rule 403

Dust Source	Required Control Measures	Guidance
Importing/ exporting bulk materials	• Stabilize material while loading to reduce dust emissions. • Maintain at least 6 inches of freeboard on haul vehicles. • Stabilize material while transporting to reduce dust emissions. • Stabilize material while unloading to reduce dust emissions. • Comply with Vehicle Code Section 23114.	• Use tarps or other suitable enclosures on haul trucks. • Check belly-dump truck seal regularly and remove any trapped rocks to prevent spillage. • Comply with track-out prevention and mitigation requirements. • Apply water while loading and unloading to reduce dust.
Stockpiles and bulk material handling	• Stabilize stockpiled material. • Stockpiles within 100 yards of off-site occupied buildings must not be greater than 8 feet high, or must have a road bladed to the top to allow water truck access, or must have an operational water irrigation system capable of completely covering the stockpile.	• Add and remove material from the downwind portion of the stockpile. • Maintain storage piles to avoid steep sides or faces.
Truck loading	• Water material before loading. • Ensure that freeboard exceeds 6 inches (California Vehicle Code Section 23114).	• Ensure that the loader bucket is close to the truck to minimize drop height while loading. • Empty loader bucket so that no dust is generated.
Staging areas	• Stabilize staging areas during use. • Stabilize staging area soils at project completion.	• Limit the size of staging areas. • Limit vehicle speeds to 15 miles per hour. • Limit the size and number of staging area entrances and exits.
Traffic areas for construction activity	• Stabilize all off-road traffic, parking areas, and haul routes. • Direct construction traffic over established haul routes.	• Apply gravel or paving as soon as possible to haul routes that will become future roadways. • Construct barriers to restrict vehicles to established haul routes and parking areas.
Road shoulder maintenance	• Apply water to unpaved road shoulders prior to clearing. • Apply chemical dust suppressants and/or washed gravel to maintain a stabilized surface after completing road shoulder maintenance.	• Installation of curbing and/or paving or road shoulders can reduce recurring maintenance costs. • Use of chemical dust suppressants can inhibit vegetation growth and reduce future road shoulder maintenance costs.
Disturbed soil	• Stabilize disturbed soil throughout the construction site and between structures.	• Limit vehicle traffic and disturbances on soils where possible. • If interior block walls are planned, install them as soon as possible. • Apply water or stabilizing agents in sufficient quantity to prevent the generation of dust.
Trenching	• Stabilize surface soils where trenchers, excavators, or support equipment will operate. • Stabilize soils at completion of trenching.	• Water soils before trenching. For deep trenching, first trench to 18 inches and soak deeper soils before continuing to trench to final depth. • Wash mud and soil from trenching equipment at the conclusion of trenching.
Screening	• Water material before screening. • Limit fugitive emissions to comply with opacity and plume length standards. • Stabilize material immediately after screening.	• Dedicate a water truck or high capacity hose to screening operations. • Drop material through screen slowly and minimize drop height. • Install a wind barrier with a porosity of no more than 50 percent and a height equal to the drop height on the upwind side of screening equipment.

Table 3.2-2. Best Available Dust Control Measures Required by SCAQMD Rule 403

Dust Source	Required Control Measures	Guidance
Unpaved roads and parking lots	• Stabilize soils to meet applicable performance standards. • Limit vehicle travel to established haul roads and parking lots.	• Restrict vehicle movements to established haul roads and parking lots to reduce the area requiring stabilization.
Landscaping	• Stabilize soils, materials, and slopes.	• Apply water to stabilize materials. • Maintain materials in a crusted condition. • Maintain effective cover over materials. • Stabilize sloping surfaces with soil binders until vegetation or ground cover can stabilize the slopes. • Hydroseed before the rainy season.
Turf overseeding	• Apply sufficient water immediately prior to conducting turf vacuuming activities to meet opacity and plume length standards. • Cover haul vehicles prior to exiting the site.	• Haul waste material immediately off-site.
Vacant land	• In instances where vacant lots are 0.10 acre or larger and have a cumulative area of 500 square feet or more that are driven over and/or used by motor vehicles and/or off-road vehicles, prevent motor vehicle and/or off-road vehicle trespassing, parking, and/or access by installing barriers, curbs, fences, gates, posts, signs, shrubs, trees, or other effective control measures.	

Source: SCAQMD 2005, Rule 403.

In addition to the dust control requirements in Table 3.2-2, Table 3.2-3 identifies enhanced dust control requirements applicable to especially large operations, which are any active operations on property containing 50 or more acres of disturbed surface area; or any earth-moving operations with a daily earth-moving or throughput volume of 3,850 cubic meters (5,000 cubic yards) or more three times during the most recent 365-day period. The proposed project and alternatives would not include any large operation activities after completing construction.

Table 3.2-3. Enhanced Dust Control Measures Required for Large Operations by SCAQMD Rule 403

Dust Source	Dust Control Measure
Earthmoving: Construction cut areas and mining	Conduct watering as necessary to prevent visible emissions from extending more than 100 feet beyond the active cut or mining area unless the area is inaccessible to watering vehicles due to slope conditions or other safety factors.
Earthmoving: Construction fill areas	Maintain soil moisture content at a minimum of 12 percent, as determined by the American Society for Testing and Materials (ASTM) Method D-2216 or other equivalent method approved by the Executive Officer, the CARB, and the EPA. For areas which have an optimum moisture content for compaction of less than 12 percent, as determined by ASTM Method D-1557 or other equivalent method approved by the Executive Officer, the CARB, and the EPA, complete the compaction process as expeditiously as possible after achieving at least 70 percent of the optimum soil moisture content. Two soil moisture evaluations must be conducted during the first three hours of active operations during a calendar day, and two such evaluations during each subsequent four-hour period of active operations.

Table 3.2-3. Enhanced Dust Control Measures Required for Large Operations by SCAQMD Rule 403

Dust Source	Dust Control Measure
Earthmoving except for mining operations or construction cut and fill areas	Either: Maintain soil moisture content at a minimum of 12 percent, as determined by ASTM Method D-2216 or other equivalent method approved by the Executive Officer, the CARB, and the EPA. Two soil moisture evaluations must be conducted during the first three hours of active operations during a calendar day, and two such evaluations during each subsequent four-hour period of active operations. Or: For any earthmoving which is more than 100 feet from all property lines, conduct watering as necessary to prevent visible dust emissions from exceeding 100 feet in length in any direction.
Disturbed surface areas: Completed grading areas	Either: Apply soil stabilizers within five working days of grading completion. Or: Apply water to at least 80 percent of all inactive disturbed surface areas (excluding any areas which are inaccessible to watering vehicles due to excessive slope or other safety conditions) on a daily basis when there is evidence of wind-driven fugitive dust. Or: Establish a vegetative ground cover within 21 days after active operations have ceased. Ground cover must be of sufficient density to expose less than 30 percent of unstabilized ground within 90 days of planting, and at all times thereafter.
Disturbed surface areas except for completed grading areas	Apply dust suppression in sufficient quantity and frequency to maintain a stabilized surface. Any areas which cannot be stabilized, as evidenced by wind-driven fugitive dust, must have an application of water at least twice per day to at least 80 percent of the unstabilized area.
Inactive disturbed surface areas	Either: Apply water to at least 80 percent of all inactive disturbed surface areas (excluding any areas which are inaccessible to watering vehicles due to excessive slope or other safety conditions) on a daily basis when there is evidence of wind-driven fugitive dust. Or: Apply dust suppressants in sufficient quantity and frequency to maintain a stabilized surface. Or: Establish a vegetative ground cover within 21 days after active operations have ceased. Ground cover must be of sufficient density to expose less than 30 percent of unstabilized ground within 90 days of planting, and at all times thereafter. Or: Use any combination of the above control actions such that, in total, these actions apply to all inactive disturbed surface areas.
Open storage piles	Either: Apply chemical stabilizers. Or: Apply water to at least 80 percent of the surface area of all open storage piles on a daily basis when there is evidence of wind-driven fugitive dust. Or: Install temporary coverings. Or: Install a three-sided enclosure with walls having no more than 50 percent porosity which extend, at a minimum, to the top of the pile. This option may only be used at aggregate-related plants or at cement manufacturing facilities.
Unpaved roads	Either: Water all roads used for any vehicular traffic at least once every 2 hours during active operations (3 times per normal 8-hour work day). Or: Water all roads used for any vehicular traffic once daily and restrict vehicle speeds to 15 miles per hour. Or: Apply a chemical stabilizer to all unpaved road surfaces in sufficient quantity and frequency to maintain a stabilized surface.
All sources	Any other control measures approved by the Executive Officer and the EPA as equivalent to the measures specified in this table may also be used.

Source: SCAQMD 2005, Rule 403.

Additionally, State regulations for diesel-fueled sources (California Code of Regulations, Title 13, Section 2449) would also affect construction activity. State regulations limit the unnecessary idling of diesel off-highway vehicle and equipment engines (CARB 2008a and 2008b). Except when necessary for normal equipment operations, vehicle queuing, engine testing and maintenance, or for operator comfort and safety, vehicle idling for more than five minutes is prohibited.

As currently proposed, the project facilities would not require any stationary emission sources (such as backup generators) for facility operations. Power from existing local distribution lines would provide backup power to key facilities during DHSP operations. Although no SCAQMD air permits would be required for project operations, various SCAQMD regulations would apply to the project. Paints or other architectural coatings used at facility buildings or on facility equipment would be subject to the volatile organic compound limits of SCAQMD Rule 1113. Cleaning solvents used for facility maintenance operations also may be subject to various requirements outlined in SCAQMD Rule 442 (Usage of Solvents) and SCAQMD Rule 1171 (Solvent Cleaning Operations).

Clean Air Act Conformity

Section 176(c) of the CAA requires federal agencies to ensure that actions undertaken in nonattainment or maintenance areas are consistent with the CAA and with federally enforceable air quality management plans. EPA has promulgated separate rules that establish conformity analysis procedures for transportation (highway/mass-transit) projects (40 CFR Part 93, Subpart A) and for other general federal agency actions (40 CFR Part 93, Subpart B). General conformity requirements are potentially applicable to many federal agency actions, but apply only to those aspects of an action that involve on-going federal agency responsibility and control over direct or indirect sources of air pollutant emissions.

The EPA conformity rule establishes a process that is intended to demonstrate that the proposed federal action:

- Would not cause or contribute to new violations of federal air quality standards;
- Would not increase the frequency or severity of existing violations of federal air quality standards; and
- Would not delay the timely attainment of federal air quality standards.

The EPA general conformity rule applies to federal actions occurring in nonattainment or maintenance areas when the total direct and indirect emissions of nonattainment pollutants (or their precursors) exceed specified thresholds. The emission thresholds that trigger requirements of the conformity rule are called *de minimis* levels. Emissions associated with stationary sources that are subject to permit programs incorporated into the SIP are not counted against the *de minimis* threshold.

Compliance with the conformity rule can be demonstrated in several ways. Compliance is presumed if the net increase in direct and indirect emissions from a federal action would be less than the relevant *de minimis* level. If net emissions increases exceed the relevant *de minimis* value, a formal conformity determination process must be followed. Federal agency actions subject to the general conformity rule cannot proceed until there is a demonstration of consistency with the SIP.

3.2.2 Existing Conditions

Climate

The Colorado Desert has a typical desert climate, having extreme daily temperature changes, low annual precipitation, strong seasonal winds, and mostly clear skies. The annual highest tempera-

ture in the Colorado Desert exceeds 100°F and the average daily temperature variation is 35 degrees in the summer and 30 degrees in the winter. Winter temperatures are more moderate, with mean maximum temperatures in the low 60s and lows in the low or mid 30s. According to the California Department of Fish and Game (DFG), "The Colorado Desert's climate distinguishes it from other deserts. The region experiences greater summer daytime temperatures than higher-elevation deserts and almost never experiences frost. In addition, the Colorado Desert, especially toward the southern portion of the region, experiences two rainy seasons per year, in the winter and late summer, while the more northerly Mojave Desert has only winter rains" (DFG 2007). The City of Twentynine Palms, located 45 miles northwest of the DHSP, has a total average annual precipitation of less than four and a half inches (WRCC 2011). Approximately 48 percent of the annual precipitation occurs in the winter season, between December and March. However, occasional heavy precipitation occurs in the summer due to thunderstorms as monthly average data (WRCC 2011) shows 38 percent of the annual precipitation occurs in July, August, and September.

Air Quality

The air pollutants of greatest concern in Riverside County are ozone and particulate matter (PM10 and PM2.5). The seriousness of air pollution problems is greatest in the urbanized western portions of Riverside County and least in the eastern portion of Riverside County. Portions of Riverside County fall into three separate air basins:

- The South Coast Air Basin in western Riverside County (west of San Gorgonio Pass and the San Jacinto Mountains),
- The Salton Sea Air Basin in the Coachella Valley portion of Riverside County (between the San Jacinto Mountains and the Little San Bernardino Mountains), and
- The Mojave Desert Air Basin in eastern Riverside County (east of the Little San Bernardino Mountains, north of the Cottonwood Mountains, and east of the Orocopia Mountains).

The project study area is located in the SCAQMD-jurisdiction portion of the Mojave Desert Air Basin. Most air quality monitoring stations in Riverside County are in the South Coast Air Basin and Salton Sea Air Basin portions of the County. There are no air quality monitoring stations in the immediate vicinity of the DHSP. An air quality monitoring station in Blythe (46.5 miles east-southeast of the project site) measures only ozone levels. The National Park Service operates three air quality monitoring stations in JTNP. These monitoring stations measure ozone, sulfur dioxide, and PM10 concentrations.

There are several monitoring stations in the Riverside County and Imperial County portions of the Salton Sea Air Basin, but all of those monitoring stations are influenced by pollutant transport from the South Coast Air Basin. In addition, some of the Imperial County monitoring stations are influenced by pollutant transport from Mexico. Because the monitoring stations in JTNP and those in the Salton Sea Air Basin are more strongly influenced by pollutant transport from the South Coast Air Basin than in the project study area, data from those monitoring stations are not considered representative of air quality conditions in the project study area.

All federal ambient air quality standards, except the ozone standard, are currently being met in the Mojave Desert Air Basin portion of Riverside County, and State standards for ozone and PM10 are occasionally exceeded, resulting in a state designation of nonattainment for those two

pollutants. Table 3.2-4 provides a summary of the last three years of available ambient monitoring data. Presented ozone data are collected from JTNP Monitoring Station located 26 miles from the project site and PM10 data are collected from Indio-Jackson Street Monitoring Station located 49 miles from the project site.

Table 3.2-4. Background Ambient Air Quality Data

	Number of Days Exceeding NAAQS			Number of Days Exceeding CAAQS			Maximum Concentration (ppm or μg/m³) [a]		
Pollutant	2008	2009	2010	2008	2009	2010	2008	2009	2010
1-Hour Ozone	—	—	—	36	24	19	0.140	0.121	0.119
8-Hour Ozone	72	59	53	108	90	90	0.110	0.104	0.105
24-Hour PM10 – Federal	—	—	—	—	—	—	128.0	132.0	107.0
24-Hour PM10 – State	—	—	—	76.3	24 [b]	23.9	129.0	131.0	108.0
Annual PM10 – State	—	—	—	—	—	—	39.8	31.8	29.7

Source: CARB 2011d.
ppm = parts per million; μg/m³ = micrograms per cubic meter; NA = Not Available; "—" = Not Applicable.
Note:
[a] Gaseous pollutant (ozone) concentrations are shown in ppm and particulate (PM10) concentrations are shown in μg/m³.
[b] Number of days exceeding CAAQS is estimated by multiplying 6 by the number of measured days exceeding CAAQS as measurement are collected every six days.

Table 3.2-5 lists the federal and state attainment status designations applicable to the Mojave Desert Air Basin portion of Riverside County.

Table 3.2-5. Federal and State Attainment Status Designations in the Mojave Desert Air Basin Portion of Riverside County

Pollutant	Federal Designation	State Designation
Ozone	Unclassified/Attainment	Nonattainment
Nitrogen Dioxide	Unclassified/Attainment	Attainment
Carbon Monoxide	Unclassified/Attainment	Unclassified
Sulfur Dioxide	Unclassified	Attainment
PM10 (Inhalable Particulate Matter)	Unclassified	Nonattainment
PM2.5 (Fine Particulate Matter)	Unclassified/Attainment	Unclassified
Lead	No Federal Designation	Attainment
Sulfates	No Federal Standard	Attainment

Source: USEPA 2011a; CARB 2011c

Areas with unclassified or unclassified/attainment designations are treated as attainment areas. Because there are no federal nonattainment or maintenance designations in the Mojave Desert portion of Riverside County, federal agency actions in the Mojave Desert Air Basin portion of Riverside County are not subject to CAA conformity review requirements.

Visibility

The National Park Service has been monitoring visibility conditions in JTNP since 2001. Visibility can be impaired by haze caused by fine particles in the air, including dust. However, visibility monitoring data at JTNP suggest that the worst visibility days at JTNP are caused by high concentrations of ammonium nitrate (IMPROVE 2011).

Emission Sources

The dominant emission sources in the project area are mobile sources (traffic) on I-10, Highway 177, and other area roadways, agricultural operations on private lands, recreational vehicle use on public and private lands, fuel combustion associated with development, use of surrounding residential land uses, and wind erosion from lands with sparse vegetation. Current ongoing dust and vehicle emissions also occur in the immediate vicinity of the solar facility as a result of ongoing construction of the Desert Sunlight Solar Farm project, immediately north of the solar facility.

Ground Conditions Affecting Wind Erosion

Wind can move soil particles by three general processes: surface creep (rolling along the ground surface), saltation (a bouncing movement along the ground surface caused by particle collisions that help force a particle into the air for a brief time before it falls back to the ground), and suspension transport (particles lofted into the air and remaining suspended for more than a minute). Surface creep and saltation typically account for most soil mass movement associated with wind erosion, and normally involve larger sand-size soil particles. Suspension transport normally involves smaller silt and clay size soil particles. From an air pollution standpoint, suspension transport of soil particles is the wind erosion process that generates fugitive dust.

The extent of fugitive dust generated by wind erosion is affected by numerous factors, including:

- Soil texture (the mix of clay, silt, and sand sized particles in a soil);
- Particle aggregation (mostly due to clay content);
- Organic matter content of soils;
- Non-erodible surface features (gravel, rocks, boulders, rock outcrops, etc.);
- Extent and density of vegetation cover;
- Surface crusting – mineral or biological crusts – especially between vegetation stems;
- Soil moisture conditions;
- Wind speed;
- Vertical air turbulence;
- Sedimentation of erodible material from upslope water erosion or from flood deposits; and
- Active disturbance of surface soils.

Soil moisture conditions and surface conditions are important factors determining the vulnerability of an area to wind erosion. In desert areas, soil moisture levels are high only during and after rainfall or flash flood events. Consequently, soil moisture levels in desert areas are high enough to influence wind erosion processes for only brief intermittent periods.

The surface features of greatest importance are non-erodible surface material, vegetation cover, mineralized soil crusts, and biological soil crusts. Biological soil crusts are formed by living organisms and their by-products, creating a crust of soil particles bound together by organic materials. The most common types of non-erodible surface materials in deserts include scattered rocks and boulders, rock formation outcrops, and desert pavement. Desert pavements are areas with rock fragments of pebble to cobble size that cover an underlying layer of sand, silt, or clay. Desert pavement areas typically have little or no vegetation cover. The extent to which desert

pavement reduces wind erosion and resulting fugitive dust depends on the density of the rock fragments covering the underlying soil.

Desert pavements seem to form from two different processes (McAuliffe 2011). On rocky alluvial fans, fine dust settling out of the air accumulates between and below the surface layer of rocks, eventually forming a thin silt and clay layer that separates the surface rocks from the main part of the alluvial fan. Desert pavement also can form on sandy soils that contain significant amounts of gravel and rock fragments. In such situations, wind and water erosion can remove most of the sand and fine sediments from the surface, leaving the remaining rock fragments as the predominant surface layer.

3.3 BIOLOGICAL RESOURCES – VEGETATION

This section describes the environmental and regulatory settings associated with the construction and operation of the proposed project and its alternatives with respect to vegetation resources in the project study area. The project study area for vegetation resources includes the portion of the Chuckwalla Valley and surrounding mountains within a 5-mile radius of the proposed project and alternatives, as this is the limit of the area likely to be affected by the Desert Harvest Solar Project (DHSP) with respect to vegetation resources.

3.3.1 Applicable Plans, Policies, and Regulations

Federal Regulations

Endangered Species Act of 1973

The Endangered Species Act (ESA) (16 USC 1531 et seq.) and subsequent amendments establish legal requirements for the conservation of endangered and threatened species and the ecosystems upon which they depend.

Section 7

Section 7 of the ESA requires federal agencies, in consultation with, and with the assistance of the Secretary of the Interior or the Secretary of Commerce, as appropriate, to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of threatened or endangered species or result in the destruction or adverse modification of critical habitat for these species. The U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service share responsibilities for administering the Act. All federally listed threatened and endangered species that could be affected by the DHSP are under the jurisdiction of the USFWS. Regulations governing interagency cooperation under Section 7 are found at 50 CFR Part 402. The biological opinion (BO) issued by USFWS at the conclusion of a formal Section 7 consultation may include a statement authorizing a take that may occur incidental to an otherwise legal activity.

Critical Habitat

Critical habitat is defined as: (1) specific areas within the geographical area occupied by the species at the time of listing, if they contain physical or biological features essential to conservation, and those features may require special management considerations or protection; and (2) specific areas outside the geographical area occupied by the species if the agency determines that the area itself is essential for conservation. Designation of an area as critical habitat provides a means by which the habitat of an endangered or threatened species can be protected from adverse changes or destruction resulting from federal activities or projects. A critical habitat designation does not set up a preserve or refuge and usually applies only when federal funding, permits, or projects are involved. Critical habitat requirements do not apply to citizens engaged in activities on private land that do not involve a federal agency.

Section 9

Section 9 of the ESA lists those actions that are prohibited under the ESA, including take (i.e., to harass, harm, pursue, hunt, shoot, wound, trap, kill, capture, or collect or attempt to engage in

any such conduct) of listed species without special exemption. "Harm" is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or shelter. "Harass" is further defined as actions that create the likelihood of injury to listed species to an extent as to significantly disrupt normal behavior patterns which include breeding, feeding, and shelter.

Clean Water Act

The Clean Water Act (33 USC 1251 et seq.) establishes legal requirements for the restoration and maintenance of the chemical, physical, and biological integrity of the nation's waters.

Section 401

Section 401 requires that an applicant for a federal license or permit that allows activities resulting in a discharge to waters of the United States must obtain a State certification that the discharge complies with other provisions of the Clean Water Act. The Regional Water Quality Control Boards administer the certification program in California.

Section 404

Section 404 establishes a permit program administered by the U.S. Army Corps of Engineers (USACE) regulating the discharge of dredged or fill material into waters of the United States, including wetlands. Implementing regulations by the USACE are found at 33 CFR Parts 320-330. Guidelines for implementation are referred to as the Section 404(b)(1) Guidelines and were developed by the EPA in conjunction with the USACE (40 CFR Parts 230). The Guidelines allow the discharge of dredged or fill material into the aquatic system only if there is no practicable alternative that would have less adverse impacts.

California Desert Protection Act of 1994

This act expanded Death Valley and Joshua Tree National Parks, and established the Mojave National Preserve, and the Granite Mountains National Reserve. It also declared certain lands in the California desert as wilderness, and included other natural resource designations and provisions.

Noxious Weed Act of 1974, as amended

This act provides for the control and management of nonindigenous weeds that injure or have the potential to injure the interests of agriculture and commerce, wildlife resources, or the public health. Under this act, the Secretary of Agriculture was given the authority to designate plants as noxious weeds, and inspect, seize and destroy products, and to quarantine areas, if necessary to prevent the spread of such weeds.

Lacey Act, as amended (16 USC 3371-3378)

This act protects plants and wildlife by creating civil and criminal penalties for a wide variety of violations including illegal take, possession, transport, or sale of protected species.

Executive Order 11988 – Floodplain Management

This order directs all federal agencies to avoid the long-term and short-term adverse impacts associated with the occupancy and modification of floodplains, and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative.

Executive Order 11990 – Protection of Wetlands

This order directs all federal agencies to avoid to the extent possible the long- and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative.

Executive Order 13112 – Invasive Species

This order directs federal agencies to prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health impacts that invasive species cause. To do this, the order established the National Invasive Species Council; currently there are 13 Departments and Agencies on the Council.

Compliance with Floodplain and Wetland Environmental Review Requirements

Established under 10 CFR Part 1022, this regulation establishes policy and procedures relating to the Department of Energy's (DOE) responsibilities under Executive Order (EO) 11988 and 11990, including:

- DOE policy regarding the consideration of floodplain and wetland factors in DOE planning and decision-making; and
- DOE procedures for identifying proposed actions located in a floodplain or wetland, providing opportunity for early public review of such proposed actions, preparing floodplain or wetland assessments, and issuing statements of findings for actions in a floodplain.

To the extent possible, DOE shall accommodate the requirements of EO 11988 and EO 11990 through applicable DOE NEPA procedures or, when appropriate, the environmental review process under the Comprehensive Environmental Response, Compensation, and Liability Act (42 USC. 9601 et seq.).

Executive Order 13212 – Actions Concerning Regulations that Significantly Affect Energy Supply, Distribution, or Use

Approved on May 18, 2001, EO 13212 directs federal agencies involved in reviewing energy-related projects to streamline their internal approval processes and establish an interagency task force to coordinate federal efforts at expediting approval mechanisms. The interagency task force will be established to monitor and assist the agencies in the efforts to expedite their review of permits or similar actions, as necessary, to accelerate the completion of energy-related projects, increase energy production and conservation, and improve transmission of energy. This task force also shall monitor and assist agencies in setting up appropriate mechanisms to coordinate federal, State, tribal, and local permitting in geographic areas where increased permitting activity is expected.

Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act (16 U.S.C. 661 666) applies to any federal project where the waters of any stream or other body of water are impounded, diverted, deepened, or otherwise modified. Project proponents are required to consult with the USFWS and the appropriate state wildlife agency. These agencies prepare reports and recommendations that document project effects on wildlife and identify measures that may be adopted to prevent loss or damage to wildlife resources. The term "wildlife" includes both animals and plants. Provisions of the Act are implemented through the NEPA process and Section 404 permit process.

State Laws and Regulations

Natural Community Conservation Planning Act, as amended (Fish and Game Code Section 2800-2835)

The Natural Community Conservation Planning (NCCP) Act of 1991 (amended in 2002) was established to provide a regional approach to conservation for multiple species, in contrast to the single-species approach implemented under CESA and the federal ESA. The NCCP Program is implemented by CDFG as a cooperative effort by the State of California and private and public partners, designed to protect species and their habitats through an ecosystem approach. The program helps identify and provide for large area-wide protection of plants, animals, and their habitats while allowing for compatible and appropriate economic activity.

The NCCP Act promotes conservation of unfragmented habitat areas, promotes multispecies and multihabitat management and conservation, and promotes the conservation of broad-based natural communities and species diversity. It provides an option for identifying mitigation that is proportional to a project's impacts to biological resources. Participation in the NCCP program is a voluntary mechanism that can provide an early planning framework for proposed development projects.

The Desert Renewable Energy Conservation Plan (DRECP) is a NCCP being developed by BLM, USFWS, CDFG, and the California Energy Commission (CEC). It is intended to protect California desert ecosystems (including those in the project area), while allowing for appropriate development of renewable energy projects. The DRECP is scheduled to be completed in 2012. The DHSP site is within the geographic area to be covered by the DRECP.

Native Plant Protection Act

Prior to enactment of CESA and the federal ESA, California adopted the Native Plant Protection Act (NPPA, Fish and Game Code 1900-1913), authorizing the California Fish and Game Commission to designate rare or endangered native plants, and requiring State agencies to use their authority to carry out programs to conserve these plants. CESA (above) generally replaces the NPPA for plants originally listed as endangered under the NPPA. However, plants listed as rare retain that designation, and take is regulated under provisions of the NPPA. The Act prohibits the taking of listed plants from the wild and requires notification of the CDFG at least 10 days in advance of activities that may result in take, to allow CDFG to salvage listed plant species that would otherwise be destroyed.

California Desert Native Plants Act

The California Desert Native Plants Act protects California desert native plants from unlawful harvesting on both public and privately owned lands within Imperial, Kern, Los Angeles, Mono, Riverside, San Bernardino, and San Diego Counties. The following native plants, or any part thereof, may not be harvested except under a permit issued by the commissioner or the sheriff of the county in which the native plants are growing: all species of the Agavaceae (century plants, nolinas, and yuccas); all species of the family Cactaceae; all species of the family Fouquieriaceae (ocotillo, candlewood); all species of the genus *Prosopis* (mesquites); all species of the genus *Cercidium* (paloverdes); catclaw acacia (*Acacia greggii*); desert holly (*Atriplex hymenelytra*); smoke tree (*Dalea spinosa*); and desert ironwood (*Olneya tesota*), both dead and alive (provision 80073). This provision excludes any plant that is declared to be a rare, endangered, or threatened species by federal or State law or regulations, including, but not limited to, the California State Fish and Game Code. The fee for the permit to remove any of these plants will not be less than $1 per plant, except for Joshua trees (*Yucca brevifolia*), which will not be less than $2 per plant.

Streambed Alteration Agreements, California Fish and Game Code, Sections 1600 – 1616

Under these sections of the Fish and Game Code, an applicant is required to notify CDFG prior to constructing a project that would divert, obstruct or change the natural flow, bed, channel, or bank of a river, stream, or lake. Preliminary notification and project review generally occur during the environmental review process. When a fish or wildlife resource may be substantially adversely affected, CDFG is required to propose reasonable project changes to protect the resource. These modifications are formalized in a Streambed Alteration Agreement that becomes part of the plans, specifications, and bid documents for the project. CDFG jurisdiction is determined to occur within the water body of any natural river, stream or lake. The term "stream," which includes creeks and rivers, is defined in Title 14, CCR, Section 1.72.

Bureau of Land Management Plans and Guidelines

California Desert Conservation Area Plan: Vegetation Element

The California Desert Conservation Area (CDCA) is a 25-million-acre expanse of land in southern California designated by Congress in 1976 through the Federal Land Policy and Management Act (FLPMA). The BLM administers about 10 million of those acres. When Congress created the CDCA, it recognized its special values, proximity to the population centers of southern California, and the need for a comprehensive plan for managing the area. Congress stated that the CDCA Plan must be based on the concepts of multiple use, sustained yield, and maintenance of environmental quality. The proposed project and alternatives fall within the CDCA.

The Vegetation Element of the CDCA Plan contains the following goals: to conserve federally and State-listed rare, threatened, or endangered plants and to further the purposes of the ESA and similar State laws; to treat unusual plant assemblages that rate as highly sensitive and very sensitive in a manner that will preserve their habitat and ensure their continued existence; to manage wetland and riparian areas in the desert; to sustainably maintain the continued existence and biological viability of the vegetation resource in the CDCA while providing for the consumptive needs of wildlife, livestock, wild horses and burros, and public uses; to provide guidance for the manipulation of plant habitats or vegetation; and to encourage the use of private desert lands for

commercial production of valuable desert plants. The plan identifies the need for monitoring efforts and directing these efforts to those areas with the greatest management need.

Northern and Eastern Colorado Desert Coordinated Management Plan/EIS

The Northern and Eastern Colorado Desert Coordinated Management Plan/EIS (NECO Plan/EIS) is a landscape-scale, multi-agency planning effort that seeks to protect and conserve natural resources while simultaneously balancing human uses of the California portion of the Sonoran Desert ecosystem. The NECO planning area, which is located in the southeastern CDCA, encompasses over 5 million acres and hosts 60 sensitive plant and animal species. The NECO Plan/EIS amends BLM's CDCA Plan (BLM and CDFG 2002; BLM 2002). This multiple use planning effort also takes into account other uses of the desert, such as hiking, hunting, rock hounding, off-highway recreation, commercial mining, livestock grazing, and utility transmission. The NECO Plan/EIS provides integrated ecosystem management for special-status species and natural communities for all federal lands, and regional standards for public land health for BLM lands.

BLM Sensitive Species

BLM Sensitive Species are species designated by the State Director that are not federally listed, proposed, or candidate species. BLM's policy is to "ensure that actions authorized, funded, or carried out do not contribute to the need to list any of these species as threatened or endangered." Various offices of the BLM maintain lists of sensitive plant and wildlife species that are to be considered as part of the management activities carried out by the BLM on the lands that they administer.

Cacti and Yucca Removal Guidelines

The BLM normally requires transplanting or salvage of certain native plant species that would be lost to development on lands under its jurisdiction. Species that typically require salvage in this region include yuccas (*Yucca* spp.), ocotillo (*Fouquieria splendens*), and cacti.

Regional and Local Regulations

County of Riverside General Plan

The open space policy relevant to vegetation is defined in the Desert Center Area Plan (DCAP) within the Riverside County General Plan as follows:

DCAP 10.1 Encourage clustering of development for the preservation of contiguous open space.

3.3.2 Environmental Setting

The proposed project and alternatives would be located in the upper Chuckwalla Valley, on public lands administered by the BLM in unincorporated Riverside County, 6 miles north of Desert Center, California. The project would be located in the Colorado Desert region of the larger Sonoran Desert. Within California, the 7-million-acre Colorado Desert region extends from the border of the higher-elevation Mojave Desert in the north to the Mexican border in the south, and from the Laguna Mountains of the Peninsular Ranges in the west to the Colorado River in the east.

The Colorado Desert is generally at lower elevation than the Mojave Desert to the north, and much of the land lies below 1,000 feet above mean sea level (AMSL). Mountain peaks rarely exceed 3,000 feet AMSL. This desert experiences more summer precipitation than the northern deserts, and although annual precipitation is low overall, a substantial portion of it falls during August and September, usually as brief and intense thunderstorms. Average annual rainfall recorded at the Eagle Mountain weather station (Station No. 042598), located 2.5 miles west of the solar facility site, is 3.68 inches (9.35 cm; WRCC 2011). Common habitat types of the Colorado Desert include coarse sandy bajadas and alluvial fans supporting shrublands dominated by creosote bush, saltbush, and other shrubs; valley floors with finer soils, generally supporting saltbush scrub; and rocky mountain slopes supporting a mix of shrubs, cacti, and small trees (such as Joshua trees, junipers, and ocotillos). Less common and often specialized habitats of the Colorado Desert include palm oases, windblown sand dunes, and desert washes dominated by "microphyll" (small-leaved) shrubs and trees, such as desert ironwood and smoke trees. The proposed project and alternative sites lie within the planning area for the NECO, as described above.

The proposed solar facility site is currently undeveloped, natural open space consisting of primarily native vegetation. The surrounding area consists primarily of public lands managed by the BLM with smaller private land parcels to the south and east (see Figure 3.1-1 in Appendix A). The Desert Sunlight Solar Farm (DSSF) project, now under construction, is located adjacent to the northern boundary of the DHSP site and grading and vegetation clearing has occurred on a portion of the DSSF site.

Some of the private lands to the south and east of the DHSP site have been developed as residential and agricultural lands uses and have been cleared of native vegetation. These include active and inactive jojoba fields, rural residential lands, and the community of Lake Tamarisk.

Joshua Tree National Park (JTNP) surrounds the upper Chuckwalla Valley on the north, east, and west. To the north, the JTNP boundary is about 7 miles from the northern boundary of the proposed solar facility, and about 4 miles north of the DSSF site. The Coxcomb Mountains, in the southeastern corner of JTNP, are located about 1.8 miles northeast of the northeastern corner of the proposed solar facility site. To the west, the JTNP boundary is about 3.5 miles from the western boundary of the proposed solar facility site at Kaiser Road.

3.3.3 Methodology

Surveys Conducted for the Desert Sunlight Solar Farm Project

Gen-tie line route Alternatives B (proposed gen-tie), C, and D for the DHSP conform to gen-tie line Alternatives A-1 and A-2, described and analyzed for the DSSF, as incorporated by reference in section 1.11 (BLM 2011a). Recent, complete surveys were conducted along these gen-tie line routes for the DSSF, and the results of those surveys have been used to characterize baseline conditions along gen-tie line routes B, C, and D for the DHSP. Those surveys are described in detail in the DSSF EIS (BLM 2011a) and the DSSF Biological Resources Technical Report (Ironwood 2010) and are incorporated here by reference. Relevant studies and results are summarized below:

- Prior to conducting field surveys for the DSSF, a biological resources literature search was performed to identify resources with the potential to occur along the gen-tie line routes. The

study area for the gen-tie lines included a 400-foot wide study corridor to allow for some degree of flexibility during final engineering design with the assurance that the final disturbance area would be covered by the respective study areas.

- Vegetation and habitat mapping within the gen-tie line corridors was conducted in September 2009. Desert Dry Wash Woodland, Sonoran Desert Scrub, and Developed/Disturbed/Agriculture vegetation and land form coverage types were mapped along the DSSF gen-tie routes A-1 and A-2 (i.e., DHSP gen-tie line Alternatives B, C and D). These vegetation communities are described in Section 3.3.5 below.
- Botanical surveys following protocols established by CDFG, BLM, and USFWS were conducted within the DSSF gen-tie study areas in spring 2010, which followed a winter season with above-average rainfall that resulted in an increased rate of annual plant production from previous drought years. The following special-status plant species were found along the gen-tie routes: crucifixion thorn (DSSF gen-tie lines A-1 and A-2; i.e., DHSP gen-tie line Alternatives B, C, and D), California ditaxis (DSSF gen-tie line A-1; i.e. DHSP gen-tie line Alternatives B and C), and desert unicorn plant (DSSF gen-tie lines A-1 and A-2; i.e., DHSP gen-tie line Alternatives B, C, and D). These species are described below in Section 3.3.7.

Vegetation, Habitat, and Jurisdictional Streambeds

Aspen biologists mapped streambeds and vegetation on the proposed DHSP solar facility site during September and October 2011. Vegetation mapping and jurisdictional delineations of the gen-tie alignment Alternatives B, C, and D are based on the DSSF project EIS and supporting documents. These three alignments conform to alternative gen-tie lines A-1 and A-2, described and analyzed for the DSSF project (BLM 2011a). Aspen biologists reviewed these alignments in the field to ground-truth the prior mapping and descriptions, and to identify any substantial changes that may have taken place. Based on this field verification, the discussion of vegetation on gen-tie alignment Alternatives B and C is based on the DSSF project data. Vegetation mapping of gen-tie alignment Alternative E was completed by Aspen biologists in October 2011, and the jurisdictional delineation for Alternative E was completed in spring of 2012.

Prior to beginning field work, visible streambeds were mapped on USDA 2009 and 2010 NAIP Imagery, resolution of 1 square meter (i.e., the pixels are 1m x 1m) as a GIS shapefile. Streambeds were delineated by field-verifying presence and widths of each channel, and then refining the mapped data. During the initial site visits (8 and 9 September 2011), channel width and depth data were collected at a "sample" series of streambeds within a portion of the site. Based on these field observations, all streambeds were mapped, and channel widths were added to the data set. This method was repeated throughout the proposed solar facility site. It should be noted that, in several areas, dirt roads on the site showed evidence of conveying water and were mapped as streambeds with a channel width equal to the width of the road. The total jurisdictional streambed acreage was calculated as the summed area of jurisdictional channels (i.e., summed length x width of all channels) plus the acreage of adjacent riparian vegetation.

Vegetation was mapped with a minimum mapping unit of about 0.15 acres (6,500 square feet) by comparing vegetation on the proposed solar facility site to aerial imagery (above) during an initial site visit (8 and 9 September 2011) to identify dominant species and determine the extent that they could be distinguished on the image. Based on this field visit, vegetation was mapped as a separate GIS shapefile. The vegetation map and text descriptions (below) were field verified

during follow-up field visits, while walking field transects and by visiting specific points, in conjunction with streambed delineation. All GIS information was digitized in the NAD 83 datum using the California State Plane Zone VI projection to ensure local accuracy when calculating area.

It should be noted that all vegetation maps are subject to some degree of imprecision due to several factors, including:

1. Vegetation types tend to intergrade on the landscape so that there are no true boundaries in the vegetation itself. In these cases, a mapped boundary represents best professional judgment.
2. The published nomenclature and descriptions of vegetation types tend to intergrade; that is, a given stand of vegetation may not match any named type in the classification scheme used. Each polygon is labeled according to the most applicable type in the classification, but there is often some ambiguity among the types.
3. Vegetation tends to be patchy. Small patches of one type are often surrounded by another type. The size of these included patches varies, depending on the minimum mapping units and scale of available aerial imagery.
4. Photo interpretation of visually similar vegetation types may be difficult. While preliminary maps are field-verified to correct potential areas of misidentification on aerial images, some locations within a project site may be inaccessible due to terrain, access restrictions, or safety issues, and therefore must be mapped based on the botanist's best professional judgment. However, for the proposed project and alternatives, field verification was possible for all areas of ambiguity.

Special-Status Plant Species

Field surveys for special-status plants have been conducted during spring and fall throughout the proposed solar facility site and along gen-tie Alternative E. Botanical surveys on the other gen-tie alternative alignments were conducted for the DSSF project EIS (BLM 2011a), and this document incorporates by reference those survey results as described above.

Surveys were conducted throughout the larger, northeastern parcel by AMEC during spring 2010; throughout both parcels by Aspen Environmental Group (Aspen) during fall 2010; throughout the smaller southwestern parcel by Aspen during spring 2011; and along the eastern gen-tie line alignment (Alternative E) by Aspen during fall 2011 and spring 2012. In addition, incidental observations of flora, including special-status species, were recorded during all field work for the vegetation, habitat, and jurisdictional wetlands, described above. The following descriptions of methods and results of botanical surveys are summarized from AMEC's botanical report, with additional information from Aspen's field work. Details of these surveys are included in the Biological Resources Technical Report (BRTR) and BRTR Supplement for Generation Tie-line Alignment Alternative E, located in Appendix C.6 and C.16 respectively.

Prior to field surveys, AMEC and Aspen biologists reviewed available literature to identify special-status biological resources known from the vicinity of the project site. The literature and databases listed below were reviewed. For data sources that are regularly updated, such as the

CNDDB and CNPS records, AMEC and Aspen biologists reviewed the available data several times during the course of the project. Only the most recent citations are included below.

- CDFG California Natural Diversity Database (CNDDB) (CNDDB 2011) for the following 7½-minute USGS topographic quads: Victory Pass, East of Victory Pass, Desert Center, Corn Spring, Coxcomb Mountains, Pinto Wells, Placer Canyon, Buzzard Spring, Hayfield Spring, West of Palen Pass, Palen Lake, and Sidewinder Well;
- California Native Plant Society Electronic Inventory of Rare and Endangered Vascular Plants of California (CNPS 2011), for the same topographic quads provided data on the California Rare Plant Ranks (CRPR) which correspond to the former CNPS rare plant list system;
- Eastern Colorado Desert Coordinated Management (NECO) Plan (BLM and CDFG 2002);
- List of California BLM Sensitive Plants (BLM 2010b);
- Recent environmental documents for nearby projects including the adjacent DSSF project (BLM 2011a), the Palen Solar Power Project (BLM 2010a), and the Genesis Solar Energy Project (BLM 2011b).

Based upon review of the literature, the databases above, and AMEC's consultation with Andrew C. Sanders (UC Riverside Herbarium), a list of special-status plant species with potential to occur in the vicinity of the DHSP was compiled (see Table 3.3-3). Plant taxa were considered to be special-status species if they were classified as one or more of the categories listed in Table 3.3-1:

Table 3.3-1. Definitions of Special-Status Species Considered in the Draft EIS and Plan Amendment

Species Designation	Agency	Definition
Endangered	USFWS	A species that is in danger of extinction throughout all or a significant portion of its range.
Threatened	USFWS	Any species that is likely to become endangered within the foreseeable future throughout all or a significant portion of its range.
Candidate	USFWS	A species the USFWS has designated as a candidate for listing under Section 4 of the ESA, published in its annual candidate review, defined as defined as a species for which has sufficient information on its biological status and threats to propose it as endangered or threatened under the ESA, but for which development of a proposed listing regulation is precluded by other higher priority listing activities.
Proposed	USFWS	A species that the USFWS has proposed for listing under Section 4 of the ESA, by publishing a Proposed Rule in the Federal Register.
Endangered	CDFG	A native species or subspecies that is in serious danger of becoming extinct throughout all or a significant portion of its range due to one or more causes, including loss or change in habitat, overexploitation, predation, competition, or disease.
Threatened	CDFG	A native species or subspecies that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of special protection and management efforts.
Rare	CDFG	A species that, although not presently threatened with extinction, is in such small numbers throughout its range that it may become endangered if its present environment worsens.
Candidate	CDFG	A native species that has been officially noticed by the California Fish and Game Commission as being under review by the CDFG for addition to the threatened or endangered species lists. CDFG candidate species are given no extra legal protection under state laws.

Table 3.3-1. Definitions of Special-Status Species Considered in the Draft EIS and Plan Amendment

Species Designation	Agency	Definition
CRPR 1A	CDFG/CNPS	Plants presumed to be extinct in California.
CRPR 1B	CDFG/CNPS	Plants rare or endangered in California and elsewhere.
CRPR 2	CDFG/CNPS	Plants rare or endangered in California but more common elsewhere.
CRPR 3	CDFG/CNPS	Plants about which more information is needed – a review list.
CRPR 4	CDFG/CNPS	Plants of limited distribution – a watch list.
NECO Plan/EIS	BLM	Special-status species that were addressed in the NECO Plan/EIS due to management concerns within the NECO Planning Area.
Sensitive	BLM	Plant and wildlife species designated by the BLM State Office (2010); also includes federal Candidate and federally delisted species which were so designated within the last 5 years, and all CRPR 1B species that occur on BLM lands.

Most designated CRPR species also have "threat ranks" as an extension to the rank number, which designates the level of endangerment by a 0.1 to 0.3 ranking. A threat rank of 0.1 indicates that a plant is seriously endangered in California (high degree/immediacy of threat), 0.2 indicates that a plant is fairly endangered in California (moderate degree/immediacy of threat), and 0.3 indicates that a plant is not very endangered in California (low degree/immediacy of threats or no current threats known). All CRPR 1A and some CRPR 3 plants lacking any threat information receive no threat code extension.

The field surveys conformed to the following protocols, as described in more detail in the BRTR.

- Protocols for Surveying and Evaluating Impacts on Special Status Native Plant Populations and Natural Communities (CDFG 2009);
- Survey Protocols Required for NEPA/ESA Compliance for BLM Special Status Plant Species (BLM 2009); and
- Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed, and Candidate Plants (USFWS 1996).

These surveys included identifying every plant observed within the survey area to the taxonomic level necessary to determine its special status, if any. In most cases, plant taxa were identified to the species, subspecies, or variety level; in some cases, identification to the genus level was sufficient to determine that the plant had no special-status ranking.

The spring 2010 botanical surveys were conducted in a year of higher than average rainfall at the solar facility site. Average annual precipitation recorded at the Eagle Mountain weather station is 3.68 inches (9.35 cm), while the total rainfall for the 2009-2010 rainfall year (1 July through 30 June) was 5.37 in (13.64 cm). Thus, the results of the spring 2010 surveys should represent a large proportion of floristic diversity on the site. However, BLM and CDFG also recommend late-season botanical surveys on desert sites, particularly in the eastern California deserts. The distribution and abundance of many fall-flowering species in the California desert is incompletely documented in literature due to a historic emphasis on spring, rather than fall, field work. Yet a substantial proportion of the flora is made up of annual species that germinate in response to summer rains, or perennial herbs that may flower at any time of year, depending on rainfall (Shreve and Wiggins 1964; Phillips and Comus 2000). Therefore, additional late-season field surveys were conducted to find and identify as many species as possible, to maximize the likeli-

hood that species not known from the area, or not included on a list of "target species" would be documented if they occur on the site. This approach to field work conforms to CDFG (2009) and BLM (2009b) guidelines recommending "floristic" botanical surveys and provides the most thorough practicable botanical inventory of the sites of the proposed solar facility site. Botanical surveys of gen-tie alignment Alternatives B, C and D were conducted for the DSSF project and are incorporated here by reference (see Section 3.3.3). Additional late summer field surveys of gen-tie alignment Alternative E were completed in 2011 and spring surveys were completed during spring 2012. Details of these surveys are located in Appendix C.16. AMEC biologists visited reference populations of two special-status species, Coachella Valley milk-vetch and Harwood's milk-vetch, to confirm that they could be reliably located and identified during the 2010 field surveys. Coachella Valley milk-vetch is the only listed threatened or endangered plant reported from the vicinity and Harwood's milk-vetch is a relatively widespread CNPS List 2.2 species with potential to occur in the project study area. In 2011, Aspen biologists visited reference populations of three additional special-status plants, California ditaxis, Utah vine milkweed, and desert all-thorn, to compare known examples with similar plants on the site of the proposed solar facility and gen-tie Alternative E.

During botanical surveys, all plant species observed were identified in the field or collected for later identification. Plants were identified using keys, descriptions, and illustrations in regional references such as Shreve and Wiggins (1964), Munz (1974), and Baldwin et al. (eds., 2002). All species noted in each survey area are listed in the BRTR (Appendix C.6). In conformance with CDFG guidelines (2009), surveys were (a) conducted during flowering seasons for the special-status plants known from the area, (b) floristic in nature, (c) consistent with conservation ethics, (d) systematically covered all habitat types on the ROW, and (e) well documented, by the BRTR (Appendix C.6 and C.16) and by voucher specimens to be deposited at Rancho Santa Ana Botanic Garden.

Botanical surveys of gen-tie alignment Alternatives B, C, and D were completed during spring 2010 by Ironwood Consulting staff, as described in the DSSF project EIS (BLM 2011a) and supporting documents. These surveys and results are summarized at the beginning of this subsection.

3.3.4 Soils and Topography

The proposed solar facility site is on the bajada downslope from Eagle Mountains and Coxcomb Mountains, at about 600 feet elevation. The northwestern Chuckwalla Valley is a broad alluvial (water transported) system, fed by numerous alluvial fans higher in the watershed. This system flows east and southeast across the site, as a series of many small, braided drainage channels. The site is within a closed basin draining to Palen Dry Lake. Soils are made up of undifferentiated alluvial material, or interbedded clay, silt and gravel carried down the bajada during depositional flood events. Soils generally have high rock and coarse sand content. There are some areas of desert pavement on older alluvium, outside the active drainage channels. There are no aeolian (i.e., wind-blown) sand deposits on the solar facility site, but aeolian sands are located to the east, at the base of the Coxcomb Mountains, and a part of gen-tie alignment Alternative E would cross these sand flats and dunes.

3.3.5 Vegetation Communities

Two vegetation types cover the proposed solar facility site and gen-tie line Alternatives B, C, and D (Figure 3.3-1a and b in Appendix A): Creosote Bush Scrub (*Larrea tridentata* Shrubland

Alliance) and Blue Palo Verde–Ironwood Woodland (*Parkinsonia florida–Olneya tesota* Woodland Alliance) (Sawyer et al. 2009). The Creosote Bush Scrub vegetation is a subset of the Sonoran Creosote Bush Scrub as described by Holland (1986) and is termed Sonoran Desert Scrub in the NECO Plan, and Blue Palo Verde–Ironwood Woodland is a subset of Holland's description of "Desert Dry Wash Woodland," and is covered under that name in the NECO Plan. There also are small areas where natural vegetation has been removed or disturbed for roads and other land uses.

Gen-tie Alternative E, located farther to the east, would cross two additional vegetation or habitat types: Active Sand Dunes and Creosote Bush Scrub (Sonoran Desert Scrub) on Partially Stabilized Sand Fields.

Creosote Bush Scrub (Sonoran Desert Scrub; Bajada/Alluvial Landforms)

Creosote Bush Scrub (Sonoran Desert Scrub) on the solar facility site is characterized by low diversity of shrub species with relatively wide spacing of shrubs, usually with bare ground between shrubs. The dominant species in this vegetation is creosote bush (*Larrea tridentata*). Associated species include white bursage (*Ambrosia dumosa*), brittlebush (*Encelia farinosa*), and big galleta grass (*Pleuraphis rigida*). This vegetation also supports a diverse assemblage of seasonal annuals, including desert sunflower (*Geraea canescens*), desert dandelion (*Malacothrix glabrata*), several pincushion species (*Chaenactis* spp.) and several species of cryptantha (*Cryptantha* spp.). The areas mapped as Creosote Bush Scrub (Sonoran Desert Scrub) also include areas of desert pavement with relatively sparse cover of low-statured creosote bush and seasonal annuals such as devil's spineflower (*Chorizanthe rigida*), kidneyleaf buckwheat (*Eriogonum reniforme*), and Emory's rock daisy (*Perityle emoryi*). The total area of Creosote Bush Scrub (Sonoran Desert Scrub) within the proposed solar facility site is approximately 1,026 acres. There is a total of 980 acres of Creosote Bush Scrub in the Alternative 5 site, and 944 acres in the Alternative 6 and Alternative 7 sites (Table 4.3-1 in Section 4.3). Creosote Bush Scrub (Sonoran Desert Scrub) is not considered a sensitive vegetation type by CDFG (CDFG 2010).

Creosote Bush Scrub (Sonoran Desert Scrub) on the proposed solar facility site matches the Desert Scrub wildlife habitat described by Laudenslayer and Boggs (1988). Within the project study area it provides habitat for a variety of wildlife species including burrowing species such as kangaroo rats (*Dipodomys* spp.), pocket mice (*Perognathus* spp.), and desert cottontail (*Sylvilagus audubonii*), and mesopredators such as desert kit fox (*Vulpes macrotis arsipus*) and coyote (*Canis latrans*). This community also serves as habitat for numerous species of reptiles including desert iguana (*Dipsosaurus dorsalis*), sidewinder (*Crotalus cerastes*), desert horned lizard (*Phrynosoma platyrhinos*), Great Basin whiptail (*Aspidocelis tigris*), and zebra-tailed lizard (*Callisaurus draconoides*). Common birds observed within this vegetation community included black-throated sparrow (*Amphispiza bilineata*), Gambel's quail (*Callipepla gambelii*), common raven (*Corvus corax*), red-tailed hawk (*Buteo jamaicensis*), and turkey vulture (*Cathartes aura*).

Blue Palo Verde–Ironwood Woodland (Desert Dry Wash Woodland)

Blue Palo Verde–Ironwood Woodland (Desert Dry Wash Woodland) occurs throughout the project study area, primarily in dry washes. This vegetation type is characterized by the presence of desert ironwood (*Olneya tesota*) and blue palo verde (*Parkinsonia floridum*). Additional tree

species such as smoketree (*Psorothamnus spinosus*) and cat claw acacia (*Acacia greggii*) also occur, but are uncommon. It is one of several communities included within broader vegetation types called desert wash woodland or microphyll woodland (Holland 1986; Schoenherr and Burk 2007). Vegetation in desert washes is generally taller, up to 9 meters (30 feet) in height, and denser than that of surrounding desert habitats, with the height of the wash vegetation proportional to the size of the arroyo (Laudenslayer 1988). Understory vegetation within these woodlands is composed of species such as big galleta grass, cheesebush (*Ambrosia salsola*), and desert lavender (*Hyptis emoryi*). Blue Palo Verde–Ironwood Woodlands (Desert Dry Wash Woodland) on the site match the Desert Wash wildlife habitat described by Laudenslayer (1988). This vegetation provides greater food, nesting, and cover, and wildlife diversity is generally greater than in the surrounding desert. Examples of species that depend in part on desert microphyll woodlands include vermillion flycatcher (*Pyrocephalus rubinus*), black-tailed gnatcatcher (*Polioptila melanura*), and burro deer (*Odocoileus hemionus eremicus*). In addition, many of the species occupying the surrounding Creosote Bush Scrub (Sonoran Desert Scrub) are found in greater numbers in microphyll woodlands. This community is ranked by CDFG as a sensitive vegetation type, with state rarity ranking of S3 (CDFG 2010). The total area of Blue Palo Verde–Ironwood Woodland (Desert Dry Wash Woodland) within the proposed solar facility site is approximately 180 acres. There is a total of 179 acres of Blue Palo Verde–Ironwood Woodland (Desert Dry Wash Woodland) in the Alternative 5 site, and 98 acres in the Alternative 6 and Alternative 7 sites (Table 4.3-1 in Section 4.3). Each of the gen-tie line alternatives would pass through limited additional acreage of this woodland vegetation, ranging from 39 to 60 acres (see Table 4.3-2).

Disturbed Areas

There are small areas within the proposed solar facility site where natural vegetation has been removed or disturbed for roads and other land uses. In most cases (e.g., narrow roads), these areas are too small for mapping at this scale; however, the DHSP site overlaps a narrow area disturbed for date palm agriculture (on an adjacent parcel) in the southeastern corner of the site. This area is mapped as "Disturbed/Disused Agriculture" on Figure 3.3-1b in Appendix A. There are 2 acres of mapped Disturbed/Disused Agriculture within the proposed and alternative solar facility sites.

Creosote Bush Scrub (Sonoran Desert Scrub) on Partially Stabilized Sand Fields

Creosote Bush Scrub (Sonoran Desert Scrub) vegetation occurs on partially stabilized sand fields in the eastern portion of gen-tie Alternative E. This area is located at the western margin of a much larger dune system at the base of the Coxcomb Mountains. This vegetation matches the description of Creosote Bush Scrub (Sonoran Desert Scrub) above, but the cover is much sparser and the substrate consists of partially stabilized sand fields with accumulations of sands mounded at the bases of the shrubs. This habitat type is suitable for a series of special-status plants and animals, including Mojave fringe-toed lizard (*Uma scoparia*), which were reported in the area in the DSSF project EIS and observed there by Aspen biologists. None of this habitat is in the immediate vicinity of the proposed solar facility, and only gen-tie line Alternative E would traverse this habitat type.

Active Sand Dunes

Active sand dunes are found in the eastern portion of the project study area on gen-tie Alternative E. These dunes are at the western margin of the larger dune system described above. This habitat type is characterized by fine aeolian sands (i.e., dunes and sand flats) that support very little vegetation. Vegetation on the dunes is sparse, but dominated by scattered creosote bush and Russian thistle (*Salsola* sp.). Only gen-tie Alternative E would occur in the vicinity of these active sand dunes.

3.3.6 Invasive Plant Species

Invasive plants are non-native species that, upon becoming established in a new area, propagate and, ultimately, displace native species, supplant food plants or other habitat elements (e.g., cover) that are important to native wildlife species, alter natural habitat structure and ecological function, alter natural wildfire patterns, or displace special-status plant occurrences and habitat (Zouhar et al. 2008; Lovich and Bainbridge 1998). These plants are considered "weeds" or "pest plants" when they invade natural landscapes (Bossard et al. 2000). Weeds and pest plants are defined here to include any species of non-native plants identified on the weed lists of the California Department of Food and Agriculture, the California Invasive Plant Council, or of special concern identified by BLM.

Numerous invasive weeds have already become widespread throughout the Colorado Desert and for some invasive species the prevention of further spread is impracticable. Examples of these species include Mediterranean splitgrass (*Schismus barbatus*), Russian thistle (*Salsola tragus*), and Sahara mustard (*Brassica tournefortii*). Others (e.g., saltcedar: *Tamarix ramosissima*) are damaging to mesic habitat types but pose little or no threat to widespread upland desert habitat.

Within the project study area, the overall prevalence of invasive species is low, generally consistent with undisturbed desert bajadas and uplands throughout the region. Invasive plant species that have been found on the solar facility site and in the surrounding areas include Mediterranean splitgrass, red brome (*Bromus madritensis* ssp. *rubens*), crane's bill (*Erodium cicutarium*), Sahara mustard, London rocket (*Sisymbrium irio*), and Russian thistle. These and other species with potential of occurring on the site now or in the future are listed in Table 3.3-2. Species identified as having a high potential to occur were not identified on site during surveys, but based on their regional occurrence and potential for spread, would be likely to colonize portions of the project study area over time under baseline conditions. The potential for introduction and/or spread of invasive weeds from implementation of the DHSP is assessed in Section 4.3.

No distinct populations of any weed species were mapped in the DHSP study area, because weeds that are present on site are broadly distributed across the site in low to very low densities. There were no areas with weeds dense enough to map as a discrete occurrence, or extensive enough to meet the minimum vegetation mapping unit (approximately 0.15 acre [6,500 square feet]).

Table 3.3-2. Weeds of the Chuckwalla Valley

Weed Species	Rankings[1]	Habitats, Range, and Control Notes	Likelihood of Occurrence at DHSP
Alhagi pseudalhagi Camel thorn	CDFA: A Cal IPC: Moderate Impacts/Invasiveness/ Distribution: B/B/B	Widespread in California, many habitats, generally controlled by eradication efforts but new infestation sources are abundant in surrounding states	Currently low, but may be introduced via vehicles or other vectors from surrounding areas; potential to colonize and infest in periodically mesic places (e.g., evaporation pond margins, leaking tanks)
Avena spp. Wild oat	CDFA: n/a Cal IPC: Moderate Impacts/Invasiveness/ Distribution: B/B/A	Widespread and abundant in W Calif.; less common in deserts; new introductions are probably chronic in region; spread limited in low desert by soils and climate	High (generally in low numbers)
Brassica tournefortii Saharan mustard	CDFA: n/a Cal IPC: High Impacts/Invasiveness/ Distribution: A/A/B	Widespread and abundant in Calif. deserts; common in interior valleys (e.g., W Riverside Co.); especially invasive in open sands and in disturbed soils (including natural disturbance)	Occurs on the site and throughout the region
Brassica spp., Other non-native mustards	CDFA: n/a Cal IPC: Moderate-High Impacts/Invasiveness/ Distribution: vary by species	Widespread and abundant in W Calif.; less common in deserts; new introductions are probably chronic in region; spread limited in low desert by soils and climate	High (generally in low numbers)
Bromus madritensis ssp. *rubens* Red brome	CDFA: n/a Cal IPC: High Impacts/Invasiveness/ Distribution: A/B/A	Ubiquitous and often abundant or dominant throughout region and throughout most of Calif.	Occurs on the site and throughout the region
Bromus spp. Other non-native brome grasses	CDFA: n/a Cal IPC: Moderate-High Impacts/Invasiveness/ Distribution: vary by species	Widespread and abundant in W Calif. or at higher elev. or latitude in deserts; new introductions are probably chronic in region; spread limited in low desert by soils and climate	High (generally in low numbers)
Centaurea melitensis, C. solstitalis Annual star-thistles	CDFA: varies by species Cal IPC: Moderate-High Impacts/Invasiveness/ Distribution: B/B/B	Widespread and abundant in W Calif.; new introductions are probably chronic in region; spread may be limited in low desert by soils and climate	Moderate (periodic introductions are likely; potential for localized establishment in low density infestations)
Cynodon dactylon Bermuda grass	CDFA: C Cal IPC: Moderate Impacts/Invasiveness/ Distribution: B/B/B	Widespread and abundant in much of Calif.; new introductions are probably chronic in region; in deserts, requires mesic soil conditions	Moderate (periodic introductions are likely; potential for localized establishment in periodically mesic places such as evaporation pond margins, leaking tanks)
Erodium cicutarium Redstem filaree; crane's bill	CDFA: n/a Cal IPC: Limited Impacts/Invasiveness/ Distribution: C/C/A	Ubiquitous and often abundant or dominant throughout region and throughout most of S Calif.	Occurs on the site and throughout the region

Table 3.3-2. Weeds of the Chuckwalla Valley

Weed Species	Rankings[1]	Habitats, Range, and Control Notes	Likelihood of Occurrence at DHSP
Halogeton glomeratus Halogeton	CDFA: A Cal IPC: Moderate Impacts/Invasiveness/ Distribution: B/A/B	Widespread in arid regions of Calif and other western states; apparently spreading; to date, generally not invasive on well-drained bajada soils	Moderate (periodic introductions are likely; potential for localized establishment in periodically mesic places such as evaporation pond margins, leaking tanks)
Hirschfeldia geniculata Summer mustard; short-pod mustard	CDFA: n/a Cal IPC: Moderate Impacts/Invasiveness/ Distribution: B/B/A	Widespread and often abundant throughout much of Calif., including deserts;	High (not reported on site, but expected in surrounding area and likely to be introduced to the site)
Hordeum spp. Hare barley, Mediterranean barley	CDFA: n/a Cal IPC: Moderate Impacts/Invasiveness/ Distribution: B/B/A	Widespread and often abundant throughout much of Calif.; less invasive in well-drained desert bajadas	High (periodic introductions are likely; potential for localized establishment on roadsides or periodically mesic places such as evaporation pond margins, leaking tanks)
Pennisetum setaceum Fountain grass	CDFA: n/a Cal IPC: Moderate Impacts/Invasiveness/ Distribution: B/B/B	Widely planted as an ornamental, and spreading throughout S. Calif. in surrounding habitats	High (periodic introductions are likely; ongoing potential for establishment on the site)
Salsola spp. Russian thistle, tumbleweed	CDFA: C Cal IPC: Limited-Moderate Impacts/Invasiveness/ Distribution: varies by species	Widespread and often abundant throughout much of Calif.; including deserts	Occurs on the site and throughout the region
Schismus spp. Mediterranean grass, split grass	CDFA: C Cal IPC: Limited Impacts/Invasiveness/ Distribution: B/C/A	Widespread and often abundant throughout much of Calif.; including deserts	Occurs on the site and throughout the region
Sisymbrium irio London rocket	CDFA: n/a Cal IPC: Moderate Impacts/Invasiveness/ Distribution: B/B/A	Widespread and often common throughout much of Calif.; less common in deserts, mainly in seasonally slightly mesic or shaded sites	Occurs on the site and throughout the region; shaded areas and increased moisture (through dust control, etc.) likely to cause increased densities
Stipa capensis (=*Achnatherum capensis*) Cape ricegrass, various other common names	CDFA: n/a Cal IPC: Moderate Impacts/Invasiveness/ Distribution: B/B/D	Established in western Coachella Valley, apparently spreading rapidly in that area	High (periodic introductions are likely; ongoing potential for establishment on the site)
Tamarix spp. Tamarisk, saltcedar	CDFA: B Cal IPC: Limited-High Impacts/Invasiveness/ Distribution: varies by species	Widespread and strongly invasive in riparian habitats throughout California and southwestern desert regions	High (seed introductions likely to be constant; potential for establishment in periodically mesic places such as evaporation pond margins, leaking tanks
Tribulus terrestris Puncture vine	CDFA: C Cal IPC: n/a	Widespread, especially roadsides, disturbed sites, and agricultural lands	High (periodic introductions are likely; ongoing potential for establishment on the site)

1 – Explanation of Rankings:

California Department of Food and Agriculture Ratings (CDFA 2011):

A: Eradication, containment, rejection, or other holding action at the state-county level. Quarantine interceptions to be rejected or treated at any point in the state;

B: Eradication, containment, control or other holding action at the discretion of the commissioner;

C: State endorsed holding action and eradication only when found in nursery; action to retard spread outside of nurseries at the discretion of the commissioner—reject only when found in a crop seed for planting or at the discretion of the commissioner

Cal-IPC Ratings (Cal-IPC 2006):

High: These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed.

Moderate: These species have substantial and apparent—but generally not severe—ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, although establishment is generally dependent on ecological disturbance. Ecological amplitude and distribution may range from limited to widespread.

Limited: These species are invasive but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic.

3.3.7 Special-Status Plant Species

Table 3.3-3 presents the special-status plant species known from the region and summarizes their natural history, agency status, and probability of occurrence on the project site. See also Figure 3 of the BRTR (Appendix C.6 of this EIS), which depicts documented occurrences of special-status plant species that are known from the vicinity. No BLM Sensitive Species or CRPR 1B species are known from the project study area. The potential for occurrence is assessed based on the following criteria:

- **Present:** The taxon was observed within the project study area during surveys or has been documented in the project study area. (*Taxon* [plural, *taxa*] refers to a specific taxonomic entity, such as a species, subspecies, or variety).
- **High:** The taxon has been documented within the project vicinity (5 miles) and suitable environmental conditions such as soil type are found within the project area; but the taxon was not detected during project-specific biological surveys.
- **Moderate:** Either the taxon has been documented within the project vicinity (5 miles), or suitable environmental conditions such as soil type are found within the project area, and the project site is within its known geographic range.
- **Low:** There are no records of the taxon within the project vicinity (5 miles), the environmental conditions are marginal, and/or the taxon is conspicuous and was not detected during biological surveys.
- **Not Likely to Occur:** No known records exist and the project study area lacks suitable habitat requirements (including soil and elevation factors).

Table 3.3-3. Special-Status Plants Present or with Potential to Occur in the Project Study Area

Species	Status	Habitat and Distribution	Blooming Period	Potential to Occur
Abronia villosa var. *aurita* Chaparral sand-verbena	Federal – None State – None BLM – Sensitive CRPR – 1B.1	Annual or perennial herb; sand, about 250–5300 ft elev; San Jacinto Mts, Inland Empire, adjacent Colorado Desert, Orange & San Diego Counties; mostly alluvial fans and benches in W Riverside Co; dunes in deserts; not rare in the deserts	Feb–Jul	Low on most project components. Large washes or roadsides provide potential habitat; otherwise not expected to occur. High in aeolian sand along Alternative E.
Ammoselinium giganteum Desert sand-parsley	Federal – None State – None BLM – None CRPR – 2.3	Annual; only known Calif location at Hayfields Dry Lake, about 1300 ft elev; heavy soils, beneath shrubs; also to Arizona and mainland N Mexico	Mar–Apr	Not Likely to Occur. No suitable dry lakebed habitat is present.
Androstephium breviflorum Pink funnel-lily, small-flowered androstephium	Federal – None State – None BLM – None CRPR – 2.3	Bulb; Mojave Desert shrub-lands; stabilized dunes or sandfields, about 700-5300 ft elev; scattered in Calif, N Arizona, S Nevada, to W Colorado	Mar–Apr	Not Likely to Occur on most project components. No suitable habitat is present on the solar field site or gen-tie Alternatives B, C, or D. Low in aeolian sand along Alternative E.
Astragalus insularis var. *harwoodii* Harwood's milk-vetch	Federal – None State – None BLM – NECO CRPR – 2.2	Annual; sand, mainly dunes, also washes and slopes; below about 1200 ft elev; SE Calif to Arizona, Baja and Sonora	Jan–May	Low on most project components. Large washes or roadsides provide potential habitat; otherwise not expected to occur. Moderate to high in aeolian sand along Alternative E.
Astragalus lentiginosus var. *coachellae* Coachella Valley milk-vetch	Federal – Endangered State – None BLM – Sensitive, NECO CRPR – 1B.2	Annual or perennial herb; open sand, generally dunes but also wash margins; below about 2200 ft elev; endemic to Coachella Valley; formerly reported from Chuckwalla Valley, those populations now recognized as *A. l.* var. *variabilis* (speckled milk-vetch)	Feb–May	Not Likely to Occur. Outside geographic range.
Ayenia compacta Ayenia	Federal – None State – None BLM – None CRPR – 2.3	Perennial herb; desert shrub-land, generally rocky sites, washes and mountain slopes below about 3600 ft elev; W low desert margins, Chuckwalla Valley, and E Mojave; also Baja and Sonora (Mexico)	Mar–Apr	Low-moderate. Large washes are marginally suitable; not seen during field surveys.
Cassia – see *Senna*				

Table 3.3-3. Special-Status Plants Present or with Potential to Occur in the Project Study Area

Species	Status	Habitat and Distribution	Blooming Period	Potential to Occur
Castela emoryi Crucifixion thorn	Federal – None State – None BLM – NECO CRPR – 2.3	Shrub; widespread but rare, Calif deserts to Arizona, Baja, and Sonora; fine sand or silt, washes, plains, non-saline bottomlands, about 350-2100 ft elev	Jun–Jul	Present. See Figure 3.3-1 in Appendix A.
Chamaesyce abramsiana (=*Euphorbia abramsiana*) Abrams' spurge	Federal – None State – None BLM – None CRPR – 2.2	Annual; sandy flats; about sea level to 3,000 ft elev; East Mojave desert, Joshua Tree NP, and low desert, to Arizona and Mexico	Sep–Nov	Low on most project components. Large washes or roadsides provide potential habitat; otherwise not expected to occur. High on aeolian sand along gen-tie Alt E.
Colubrina californica Las Animas colubrina	Federal – None State – None BLM – NECO CRPR – 2.3	Shrub; scattered mountain ranges of the low desert, incl Joshua Tree NP, Eagle Mts, Chuckwalla Mts, etc.; about 1100-3900 ft elev; rare in Calif, more common in Arizona and Mexico	Apr–May	Low. Conspicuous shrub, not found during field surveys.
Coryphantha alversonii (=*C. vivipara* var. *alversonii*; *Escobaria vivipara* var. *alversonii*) Alverson's foxtail cactus	Federal – None State – None BLM – NECO CRPR – 4.3	Cactus; desert scrub, S Mojave and Sonoran Deserts, about 250-5000 ft elev; Riverside, San Bernardino, and Imperial Counties to Arizona	May–Jun	Low-moderate. Bajada sites are marginally suitable; not seen during field surveys.
Cryptantha costata Ribbed cryptantha	Federal – None State – None BLM – None CRPR – 4.3	Annual; windblown and stabilized sand, desert shrublands; E Mojave and Sonoran Deserts, to Arizona & Baja; below sea level to about 1650 ft. elev.	Feb-May	Low on most project components. Large washes or roadsides provide potential habitat; otherwise not expected to occur. Present in dunes along Alternative E.
Cynanchum utahense (=*Funastrum utahense*) Utah vine milkweed	Federal – None State – None BLM – None CRPR – 4.2	Climbing perennial herb; sandy or gravelly soils, E and S Mojave Des through JTNP and Anza-Borrego regions, to S Nevada, NW Arizona, and SW Utah; about 500–4700 ft elev	Apr –Jun	Present. See Figure 3.3-1 in Appendix A.
Ditaxis claryana (=*D. adenophora*) Glandular ditaxis	Federal – None State – None BLM – NECO CRPR – 2.2	Perennial herb. Conflicting info in literature. Sandy soils below about 350 ft elev; or rocky uplands & sandy washes to 3000 ft; widely scattered, Sonoran Desert, Calif to Arizona and mainland Mexico	Spring or fall (based on rains)	Moderate. Habitat may be suitable, but not seen during field surveys.

Table 3.3-3. Special-Status Plants Present or with Potential to Occur in the Project Study Area

Species	Status	Habitat and Distribution	Blooming Period	Potential to Occur
Ditaxis californica (=*D. serrata* var. *californica*) California ditaxis	Federal – None State – None BLM – NECO CRPR – 3.2	Perennial herb; washes and canyons, low desert and adjacent mountains; La Quinta E to Desert Center, also Anza Borrego; about 100–3250 ft elev	Mar–Dec	Moderate. Habitat is suitable, but not seen during field surveys.
Eriastrum harwoodii Harwood's woollystar	Federal – None State – None BLM – Sensitive CRPR – 1B.2	Annual; partially stabilized desert dunes (San Bernardino, Riverside, and San Diego Counties); about 900–1700 ft elev	Mar–Jun	Low on most project components. Large washes or roadsides provide potential habitat; otherwise not expected to occur. Present on gen-tie Alt E (see revised Figure 3.3-1b in Appendix A).
Escobaria – see *Coryphantha*				
Euphorbia – see *Chamaesyce*				
Grusonia parishii (=*Opuntia parishii*) Parish's club-cholla	Federal – None State – None BLM – None CRPR – 2.2	Stem-succulent; rocky desert shrublands, East Mojave Desert, Joshua Tree NP, foothills above Coachella and Chuckwalla valleys; about 1000–5000 ft elev	May–Jul	Low-moderate. Bajada sites are marginally suitable; not seen during field surveys.
Koeberlinia spinosa var. *tenuispina* Slender-spined all-thorn	Federal – None State – None BLM – NECO CRPR – 2.2	Deciduous shrub; desert shrublands and washes, below about 1700 ft elev; central Sonoran Desert, Imperial and Riverside Counties; reported on-site in CNDDB, apparently based on misidentified *Castela emoryi*	May–Jul	Low. Not seen during field surveys; see text
Matelea parvifolia Spearleaf	Federal – None State – None BLM – NECO CRPR – 2.3	Low twining vine; rocky sites in desert shrublands, central and eastern deserts and Anza-Borrego State Park; S Nevada, Texas, and Baja; about 1400–3600 ft elev	Mar–May	Moderate. Habitat may be suitable, but not seen during field surveys.
Opuntia – also see *Grusonia*				
Opuntia wigginsi Wiggins cholla	Federal – None State – None BLM – NECO CRPR – 3.3	Cactus; doubtful taxon; probably a hybrid (*O. ramisissima* x *echinocarpa*), desert shrubland about 100-3000 ft elev, scattered Colorado Desert sites, east to Arizona	Mar	Low. Conspicuous plants, not seen during field surveys
Proboscidea althaefolia Desert unicorn-plant	Federal – None State – None BLM – NECO CRPR – 4.3	Perennial herb; generally sandy soils, desert shrubland, about 500–3300 ft elev; Sonoran Desert to Arizona and Mexico	May–Aug	Present. See Figure 3.3-1 in Appendix A

Table 3.3-3. Special-Status Plants Present or with Potential to Occur in the Project Study Area

Species	Status	Habitat and Distribution	Blooming Period	Potential to Occur
Salvia greatae Orocopia sage	Federal – None State – None BLM – Sensitive, NECO CRPR – 1B.3	Shrub; desert shrubland, washes and alluvial fans, about 100–2800 ft elev; Riverside & Imperial Counties, endemic to Orocopia Mts and Chocolate Mts (doubtful report near Cadiz, San Bernardino County)	Mar–Apr	Low. Habitat may be suitable, but not seen during field surveys and outside documented geographic range.
Selaginella eremophila Desert spike-moss	Federal – None State – None BLM – None CRPR – 2.2	Perennial herb; mountainous or hillside rock outcrops and crevices, about 600–3000 ft elev; lower desert-facing slopes of San Jacintos and adjacent desert, to Texas and Baja	n/a	Not Likely to Occur. No suitable habitat is present.
Senna covesii (=*Cassia covesii*) Coves's cassia	Federal – None State – None BLM – NECO CRPR – 2.2	Low, mostly herbaceous perennial; desert washes below about 2000 ft elev; Colorado Desert to Nevada, Arizona and Baja. [ranked S1 in CDFG 2011, corrected as S2 by pers. comm. with R. Bittman, CDFG, 21 Sep 2011]	Apr–Jun	Moderate. Habitat may be suitable, but not seen during field surveys
Stylocline sonorensis Mesquite nest straw	Federal – None State – None BLM – NECO CRPR – 1A	Annual; known from only one record, near Hayfields Dry Lake, now presumed extirpated; occurs in SE Arizona and mainland Mexico	Apr	Not Likely to Occur. Apparently extirpated from California.
Teucrium cubense ssp. *depressum* Dwarf germander	Federal – None State – None BLM – None CRPR – 2.2	Annual or perennial herb; sandy alluvium, washes, etc., below about 1300 ft elev, scattered Sonoran Desert locations, to Texas and Baja	Mar–May	Moderate. Habitat may be suitable, but not seen during field surveys
Wislizenia refracta ssp. *palmeri* Jackass-clover	Federal – None State – None BLM – NECO CRPR – 2.2	Perennial herb or subshrub; sand flats, washes, road-sides, saltbush scrub; scat-tered Calif desert locations eastward to New Mexico, sea level to about 1000 ft elev	Apr–Nov	Low on most project components. Large washes or roadsides provide potential habitat; otherwise not expected to occur. High in aeolian sand on gen-tie Alt E.

Table 3.3-3. Special-Status Plants Present or with Potential to Occur in the Project Study Area

Species	Status	Habitat and Distribution	Blooming Period	Potential to Occur
California Rare Plant Rank (CRPR): 1A. – Presumed extinct in California 1B. – Rare or endangered in California and elsewhere 2. – Rare or endangered in California, more common elsewhere 3. – Plants for which more information is needed (Review list) 4. – Plants of limited distribution (Watch List) Threat Rank Extension: 0.1 = Seriously endangered in California (over 80% of occurrences threatened/high degree and immediacy of threat) 0.2 = Fairly endangered in California (20-80% occurrences threatened) 0.3 = Not very endangered in California (<20% of occurrences threatened or no current threats known)				
BLM Sensitive = Species requiring special management consideration to promote their conservation and reduce the likelihood and need for future listing under the ESA. BLM Sensitive species also include all federal Candidate species and federal Delisted species which were so designated within the last 5 years, and CRPR 1B plant species that occur on BLM lands.				
NECO = Special-status species that were addressed in the NECO Plan/EIS due to management concerns within the NECO Planning Area.				

Source: CNPS 2011; CDFG 2011.

Listed Threatened or Endangered Species

This section describes species reported from the region that are listed as threatened or endangered under the CESA or ESA. One listed threatened or endangered plant, Coachella Valley milk-vetch, has been reported in the Chuckwalla Valley, though that report is now discounted (see below). Other listed threatened or endangered species of the low desert region (e.g., triple-ribbed milk-vetch, Peirson's milk-vetch) occur well outside the area and are not addressed in this report. No listed threatened or endangered plant species, or species proposed for listing or candidates for listing, have been documented on site of the proposed project or alternatives.

Coachella Valley milk-vetch (*Astragalus lentiginosus* var. *coachellae*): Coachella Valley milk-vetch is an annual or short-lived perennial endemic to the Coachella Valley. It is primarily found on loose aeolian or, less often, in alluvial sands, on dunes or flats and along disturbed margins of sandy washes. The easternmost known occurrences are near Indio, about 40 miles west of the project study area. All designated critical habitat for Coachella Valley milk-vetch is within the Coachella Valley, west of Indio (USFWS 2011). Specimens resembling Coachella Valley milk-vetch have been collected from the Pinto Wash and Palen dune system, northeast of Desert Center. However, the USFWS (2009; 2011) regards these as the related species, speckled milk-vetch (*A. lentiginosus* var. *variabilis*), which has no special conservation status. The only portion of the proposed project or alternatives that would affect suitable habitat for Coachella Valley milk-vetch would be gen-tie Alternative E, which would cross some areas of dunes and partially stabilized aeolian sand habitat. Speckled milk-vetch, a different species, occurs on the Alternative E alignment (Appendix C.16, [BRTR Supplement]). However, because the project study area is well outside the recognized geographic range, Coachella Valley milk-vetch is not expected to occur in the project area.

BLM Sensitive Plant Species

The BLM (2010b) maintains a list of species designated as Sensitive, including species that are rare, declining, or dependent on specialized habitats. The list includes all plants ranked by CNPS and CDFG as CRPR 1. The BLM manages sensitive species to provide protections comparable to species that may become listed as threatened or endangered (i.e., candidate species for federal

listing). None of these species has been documented on the site of the proposed project or alternatives. Each BLM sensitive plant species known from the project study area is described briefly, below.

Chaparral sand-verbena (*Abronia villosa* var. *aurita*): Chaparral sand-verbena's distribution and identification are unclear in published reference works, including Spellenberg (2002), CNPS (2011) and CNDDB (2011). This plant was added to the CNPS Inventory based on recommendations by Andrew C. Sanders of the UC Riverside Herbarium. The primary conservation concern is for chaparral sand-verbena occurrences in western Riverside County and other locations outside the desert (see Roberts et al. 2004). These western plants appear to be distinct from the very common desert sand verbena, *Abronia villosa* var. *villosa*. Plants in the low desert often match the characteristics of the western Riverside County populations, but do not appear to be regionally rare. There is some possibility that habitat adjacent to the solar facility site may support chaparral sand-verbena, especially along the access road margins near Highway 95. On gen-tie alignment Alternative E, there is a high probability that chaparral sand verbena could be found in sandy areas, particularly dunes and partially stabilized aeolian sand, along the alignment. It also could occur, with lower probability, along road or wash margins on the alignment.

Harwood's woolly-star (*Eriastrum harwoodii*): Harwood's woolly-star is an annual species known only from partially stabilized aeolian sand habitats in the deserts of eastern Riverside and San Bernardino counties (Gowen 2008) and San Diego County (DeGroot 2008). It flowers in early April. Harwood's woolly-star was documented at multiple locations along portions of gen-tie alignment Alternative E crossing dunes and partially stabilized sand (see Figure 4 of Appendix C.16. [BRTR Supplement]). Because it is an annual plant, Harwood's woolly-star plants could be found in future years in other locations within the dunes or partially stabilized sand portions of the alignment.

Orocopia sage (*Salvia greatae*): Orocopia sage is a shrubby sage with spiny leaves and lavender flowers. It is endemic to the Orocopia and Chocolate Mountains, Riverside County, where it occurs in desert washes below about 2800 feet elevation. It also has been reported from the Mojave Desert in San Bernardino County, though that report almost certainly refers to a misidentification of Death Valley sage (*S. funerea*) (A. Sanders, UC Riverside, pers. comm.). Habitat on the proposed solar facility site, gen-tie alignment, and alternative alignments appears to be suitable, but the project area is a few miles north of its known geographic range. It has not been located on the site during field surveys, but there is a low probability that it may occur on the site.

Mesquite neststraw (*Stylocline sonorensis*): Mesquite neststraw is known from southeastern Arizona and northeastern Sonora, Mexico. It has only been documented at one California location, near Hayfields Dry Lake, where it was collected in the 1930s. It is now presumed extirpated in California. Its habitat is reported as "grassy hillsides, sandy drainages, with mesquite" (Morefield 2006). The only potential habitat in the project study area is along gen-tie alignment Alternative E, on valley floor drainages. Mesquite neststraw was not located during field surveys of gen-tie alignment Alternative E and is not expected to occur in the project study area due to its apparent extirpation in California.

Other Special-Status Plant Species

In addition to the statutes and policies described above, several public agencies and private entities maintain lists of plants and animals of conservation concern. The CDFG compiles these in its compendia of "Special Plants." These plants are treated here as "special-status species." All plants of the region that are identified as CRPR 2, 3, or 4 are included in Table 3.3-3, but only those species reported from the proposed solar facility site and/or gen-tie alternatives are addressed below.

Crucifixion thorn (*Castela emoryi*): Crucifixion thorn is endemic to the Sonoran and southern Mojave Deserts of the American southwest. It is widely scattered in southwestern Arizona; its scattered occurrences in the California deserts are the western extent of its range (Turner et al. 1995). The most well-known stand is at the Crucifixion Thorn Natural Area (CTNA) in Imperial County, California. It also occurs at a few sites in northwestern Sonora, Mexico, and in northern Baja California immediately adjacent to the CTNA. Crucifixion thorn is a leafless shrub or small tree of washes, non-saline dry lakes, and other sites where water accumulates. The plants are long-lived and densely thorny. The stems are light gray-green, rigid, ascending (directed upward) with stout spine-tipped twigs. Its flowers are inconspicuous and abundant. The fruits, after maturing, remain on the plant for several years. Young plants, prior to fruiting, do not have the characteristic clustered fruits of older plants. Plants occur as scattered colonies, possibly clones, of fairly small size that do not extend far across the landscape (Shreve and Wiggins 1964). Emory's crucifixion thorn is assigned to CRPR 2.3 (rare, threatened, or endangered in California, but more common elsewhere). It is not managed by BLM as a sensitive species (BLM 2010b).

Three individual crucifixion thorn plants were located along the western boundary of the larger, northeastern solar facility parcel, and numerous additional plants were located in the smaller, southwestern parcel (Figure 3.3-1a in Appendix A). Large stands of crucifixion thorn are described as "crucifixion thorn scrub" (Sawyer et al. 2009), but the density and extent of the plants on the proposed solar facility site do not warrant mapping as a distinct vegetation type.

Utah vine milkweed (*Cynanchum utahense* [=*Funastrum utahense*]): Utah vine milkweed is a perennial herb that dies back to the ground in summer. It ranges from the California deserts to southwestern Utah. Its habitat is desert washes and canyons (Bell 2009). It was recorded on the proposed solar facility site during 2010 spring botanical surveys (see the BRTR, Appendix C.6 and C16), but was not identified in subsequent surveys. Aspen botanists located a single Utah vine milkweed a short distance outside the solar facility site while visiting a reference location of slender-spined all-thorn (below). Utah vine milkweed is assigned to CRPR 4.2 (limited distribution, "watch list"). It is not managed by BLM as a sensitive species (BLM 2010b).

Slender-spined all-thorn (*Koeberlinia spinosa* var. *tenuispina*): Slender-spined all-thorn is a densely branched shrub, to several meters tall, with dark green bark (Turner et al. 1995). Most verified California locations are within the Chocolate Mountains, a few miles south of the proposed project and alternatives, but it was also identified on the DSSF project site, north of the proposed solar facility site. It resembles crucifixion thorn (above), and is distinguished by stems, which are brighter green, not as stout, and branched at right angles rather than ascending. It does not retain fruits on the stems after maturation. The CNDDB reported a slender-spined all-thorn occurrence in the smaller, southwest portion of the proposed solar facility site, but Aspen botanists located that plant and determined that it was a young crucifixion thorn, without fruits

on the stem. Based on field survey results, slender-spined all-thorn is not likely to occur on the proposed solar facility site.

Desert unicorn-plant (*Proboscidea althaefolia*): Desert unicorn-plant, also called "devil's claw," is a perennial herb that grows from a large roost stock. It is dormant in spring, but sprouts in response to warm season rains. It ranges throughout much of the Sonoran Desert, eastward to Texas and parts of mainland Mexico. It is conspicuous for its woody, hook-shaped fruits (pods), that are evidently dispersed by clinging to fur or hooves of large mammals. Desert unicorn-plant was located at several sites on the proposed solar facility site and along gen-tie Alternative E during fall 2011, but not fall 2010. It is ranked as CRPR 4.3.

Ribbed cryptantha (*Cryptantha costata*): Ribbed cryptantha is an annual species found on windblown and stabilized sands, in the eastern Mojave and Sonoran Deserts in California, eastward into Arizona and south into Baja California. It flowers in spring. It is ranked as CRPR 4.3 (limited distribution, "watch list"). It is not managed by BLM as a sensitive species (BLM 2010a). It occurs throughout the dune habitat along gen-tie alignment alternative E (see Figure 4 of Appendix C.16. [BRTR Supplement]). In addition to these dunes, small patches of marginal habitat are present throughout the project study area on roadsides, washes, and other sandy areas. However, it has not been located on the proposed solar facility site or on gen-tie alignment Alternatives B, C, or D. Because it is an annual plant, ribbed crypantha plants could be found in future years in other locations within the dunes or partially stabilized sand portions of the alignment.

Native Cacti

Five species of cacti were found on the solar facility site and gen-tie alternatives, and are listed below. None of these species are considered special status (above), and all were relatively scarce. The BLM generally directs salvage and translocation of cacti and yucca species.

- California barrel cactus (*Ferocactus cylindraceus*)
- Fish-hook cactus (*Mamillaria tetrancistra*)
- Beavertail cactus (*Opuntia basilaris* var. *basilaris*)
- Silver cholla (*Cylindropuntia echinocarpa*)
- Pencil cholla (*Cylindropuntia ramosissima*)

3.3.8 Sensitive Natural Communities

Blue Palo Verde–Ironwood Woodland (Desert Dry Wash Woodland)

The NECO Plan/EIS designates desert dry wash woodland habitats (including Blue Palo Verde–Ironwood Woodland) as a sensitive habitat subject to 3:1 mitigation for any disturbance within that habitat. There are approximately 180 acres of this woodland habitat within the proposed solar facility site, and similar woodlands are present along portions of each gen-tie alternative (Section 3.3.5, above, and Figure 3.3-1 in Appendix A). In addition, Desert Dry Wash Woodland is present off-site, along episodic stream channels both upstream and downstream from the solar facility boundaries, and in Pinto Wash, east of the solar facility site.

Aeolian Sand Habitats, Including Active Dunes and Stabilized Sand Fields

Vegetation and habitat mapped as Active Sand Dunes and Creosote Bush Scrub (Sonoran Desert Scrub) on Partially Stabilized Sand Fields (Figure 3.3-1 in Appendix A) provide suitable habitat for several special-status plants and animals, including Harwood's milk-vetch, Harwood's woolly-star, and Mojave fringe-toed lizard. These habitats are found along portions of gen-tie Alternative E, but not on the proposed solar facility site or the other gen-tie alignment alternatives.

3.3.9 Jurisdictional Resources

Episodic or ephemeral washes are present throughout the proposed solar facility site and the gen-tie alternatives. These washes rarely carry surface flow, except during rainstorms, or during floods originating from heavy precipitation higher in the watershed. Typical regional storms generally occur during winter, are of low intensity, but can create short-lived surface flow and cause flooding on playa lake beds. Intense storms during winter or localized summer thunder-storms can produce heavier flooding. During heavy storms, runoff is characteristically by sheet-flow over the entire bajada surface, subsiding to flow within the drainages. Depending on intensity and sediment load, these events may rework sediments and channels, depositing new sediment or scouring and cutting channels. The entire system of narrow, ephemeral channels and the broader active alluvial fan and bajada surface is considered an episodic stream system.

The episodic system in the upper Chuckwalla Valley is within the closed Palen Dry Lake drain-age basin. Due to the absence of a surface water connection to a traditional navigable waterway, or other jurisdictional criteria, stream channels in the area do not fall within jurisdiction of the USACE as defined by Section 404 of the federal Clean Water Act. The jurisdictional delineation (see Section 3.3.3 for methodology and Appendix C.11 for the report and USACE concurrence) shows that ephemeral desert dry washes mapped within the DHSP are non-jurisdictional under Section 404 of the Clean Water Act (Figure 3.3-3, Attachment 2), and there are no wetlands meeting the criteria of the 1987 USACE Wetland Delineation Manual and the 2008 USACE Arid West Region Supplement (Version 2.0). On May 29, 2012, the United States Army Corps of Engineers, Los Angeles District, concurred with this determination that no Waters of the United States are present at the solar facility site or gen-tie alternative alignments (see Appendix C.11). The waters on site are classified as non-wetland State waters.

The USFWS National Wetlands Inventory (NWI) designates one area within the proposed solar facility site as a riverine intermittently flooded unconsolidated streambed wetland. The NWI uses the Cowardin et al 1979 definition of wetlands, which states that, generally, wetlands are lands where saturation with water is the dominant factor determining the nature of soil develop-ment and the types of plant and animal communities living in the soil and on its surface (EPA 2012, USFWS 2004). Wetlands are defined under the federal Clean Water Act as "areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to sup-port a prevalence of vegetation typically adapted for life in saturated soil conditions." According to the USACE Delineation Manual (1987) and the Arid West Supplement (2008), a site must meet three parameters to meet wetlands criteria: soils, vegetation and hydrology. NWI wetland maps were created at a smaller scale than that at which project surveys were conducted and were largely created through the use of aerial imagery. As stated by the USFWS, "A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image

analysis" (USFWS 2012). Project-specific surveys, which provide a much more fine-grained examination of potential wetland areas, identified this NWI wetland area at the project site as a major ephemeral wash and not a wetland according to any of the above criteria.

The CDFG regulates alterations to state-jurisdictional streambeds under Section 1600 et seq. of the California Fish and Game Code. Jurisdictional acreage is interpreted as the bed and banks of channels and adjacent riparian vegetation. In the Chuckwalla Valley area, the Blue Palo Verde – Ironwood Woodland (or Desert Dry Wash Woodland, described above) is the regional riparian vegetation type. Due to the abundance and close spacing of braided channels throughout the area, all mapped Blue Palo Verde–Ironwood Woodland (Desert Dry Wash Woodland) is adjacent to one or more channels (see Figures 3.3-1a and 3.3-2). The total acreage of state-jurisdictional streambeds and adjacent riparian habitat is 258.5 acres within the proposed solar facility site. Each of the gen-tie alternatives would pass through additional acreage of state-jurisdictional woodland vegetation (see Table 4.3-2).

3.4 BIOLOGICAL RESOURCES – WILDLIFE

This section describes the environmental and regulatory settings associated with the construction and operation of the proposed project and its alternatives with respect to wildlife resources in the project study area. The project study area for wildlife resources includes the portion of the Chuckwalla Valley and surrounding mountains within a 5-mile radius of the proposed project and alternatives, as this is the limit of the area likely to be affected by the Desert Harvest Solar Project (DHSP) with respect to most wildlife resources. For wildlife movement, the study area is larger, because it extends south of Interstate 10 and encompasses the entire Chuckwalla Valley and parts of Joshua Tree National Park.

3.4.1 Applicable Plans, Policies, and Regulations

Federal Regulations

Section 3.3.1 (Vegetation) provides descriptions of the following federal statutes and regulations that are also applicable to this Section:

- Endangered Species Act of 1973
- California Desert Protection Act of 1994
- Lacey Act, as amended (16 USC 3371-3378)
- Executive Order 13112 – Invasive Species
- Executive Order 13212 – Actions Concerning Regulations that Significantly Affect Energy Supply, Distribution, or Use
- Fish and Wildlife Coordination Act

In addition to the applicable federal regulations described in Section 3.3.1, the following federal regulations apply to this analysis of wildlife resources:

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) (16 USC 703-711) is a treaty signed by the United States, Canada, Mexico, and Japan that prohibits take of any migratory bird, including eggs or active nests, except as permitted by regulation (e.g., hunting waterfowl or upland game species). Under the MBTA, "migratory bird" is broadly defined as "any species or family of birds that live, reproduce or migrate within or across international borders at some point during their annual life cycle" and thus applies to most native bird species.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act of 1940 (BGEPA) (16 USC, 668, enacted by 54 Stat. 250) protects bald and golden eagles by prohibiting the taking, possession, and commerce of such birds and establishes civil penalties for violation of this act. The BGEPA defines 'take' to include "pursuing, shooting, shooting at, poisoning, wounding, killing, capturing, trapping, collecting, molesting, and disturbing." The USFWS (2007) further defines 'disturb' as "to agitate or bother a bald eagle or a golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, (1) injury to an eagle, (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior,

or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior."

The USFWS (2009) can authorize take of bald and golden eagles according to specific regulations. Authorized take must be associated with, but not the purpose of, an otherwise lawful activity, and cannot practicably be avoided (50 CFR § 22.26).

Desert Tortoise Recovery Plan and Critical Habitat Designation of 1994, Revised 2011

The Desert Tortoise Recovery Plan of 1994 established a strategy for the recovery and eventual delisting of the Mojave population of desert tortoise. The strategy included the identification of 6 recovery units, recommendations for a system of Desert Wildlife Management Areas (DWMAs) within the recovery units, and development and implementation of specific recovery actions, especially within DWMAs. Maintaining high survivorship of adult desert tortoises was identified as the key factor in recovery (USFWS 2011a).

The Revised Recovery Plan for the Mojave Population of the Desert Tortoise (Revised Plan) was published in May 2011 (USFWS 2011a), which re-delineated the recovery units and reduced them from 6 units to 5, based on recent genetic research and identification of geographic discontinuities or barriers that coincide with observed variation among tortoise populations. Differences in genetic, ecological, and physiological characteristics were used to help highlight boundaries or other differences among units. The recovery units cover the entire range of the Mojave desert tortoise population (all tortoises north and west of the Colorado River). The Revised Plan also includes consideration of alternative energy development, as a number of projects have been, and continue to be, proposed and developed in the range of the desert tortoise in recent years. Implementation of a number of the recommended Recovery Actions identified within the Revised Plan would make progress towards reducing threats associated with energy development. Still, the Revised Plan does not provide a single, comprehensive strategy for addressing renewable energy. To more comprehensively address this threat, the USFWS will soon add a renewable energy chapter to the Revised Plan that will act as a blueprint to allow the USFWS and its partners to comprehensively address renewable energy development and its relationship to desert tortoise recovery (USFWS 2011a).

State Laws and Regulations

Section 3.3.1 provides descriptions of the following state laws and regulations:

- California Environmental Quality Act
- California Natural Community Conservation Planning Act

In addition to the applicable state regulations described in Section 3.3.1, the following state regulations apply to this analysis of wildlife resources:

California Endangered Species Act

The California Endangered Species Act (CESA) (Fish and Game Code 2050 *et seq.)* establishes the policy of the state to conserve, protect, restore, and enhance threatened or endangered species and their habitats. CESA mandates that state agencies should not approve projects that would jeopardize the continued existence of threatened or endangered species if reasonable and prudent alternatives are available that would avoid jeopardy. There are no state agency consultation pro-

cedures under CESA. For projects that affect a species listed under both CESA and the federal ESA, compliance with the federal ESA will satisfy CESA if CDFG determines that the federal incidental take authorization is consistent with CESA under Fish and Game Code Section 2080.1. For projects that will result in take of a species listed under CESA but not under the federal ESA, the applicant must apply for a take permit under Section 2081(b). Species seen in the project study area that are listed under the CESA but not the federal ESA include the Gila woodpecker (*Melanerpes uropygialis*) and Swainson's hawk (*Buteo swainsonii*).

Fully Protected Designations – California Fish and Game Code Sections 3511, 4700, 5515, and 5050

Prior to enactment of CESA and the federal ESA, California enacted laws to "fully protect" designated wildlife species from take, including hunting, harvesting, and other activities. Unlike the subsequent CESA and ESA, there was no provision for authorized take of designated fully protected species. Currently, 36 fish and wildlife species are designated as fully protected in California, including golden eagle.

California Senate Bill 618 (signed by Governor Brown in October 2011) authorizes take of fully protected species, where pursuant to an NCCP, approved by CDFG. The legislation gives fully protected species the same level of protection as is provided under the Natural Community Conservation Planning Act for endangered and threatened species (see Section 3.3.1).

Native Birds – California Fish and Game Code, Sections 3503 and 3513

California Fish and Game Code Section 3503 prohibits take, possession, or needless destruction of bird nests or eggs except as otherwise provided by the Code; Section 3503.5 prohibits take or possession of birds of prey or their eggs except as otherwise provided by the Code; and Section 3513 provides for the adoption of the MBTA's provisions (above). With the exception of a few non-native birds such as European starling, the take of any birds or loss of active bird nests or young is regulated by these statutes. Most of these species have no other special conservation status as defined above. The administering agency for these sections is the CDFG.

Protected Furbearers–- California Code of Regulations Title 14 Section 460

The California Code of Regulations states that "[f]isher, marten, river otter, desert kit fox and red fox may not be taken at any time." Based on the California Fish and Game Code definition of "take," which is reaffirmed in applicable game and furbearer regulations (CCR Section 255), the CDFG does not issue Incidental Take Permits or Memoranda of Understanding to permit the capture or handling of desert kit fox.

Bureau of Land Management Plans and Guidelines

The BLM CDCA Plan, NECO Plan, and Sensitive Species lists are described in Section 3.3.1. Further description of the CDCA and NECO Plans, below, addresses wildlife provisions of those plans.

California Desert Conservation Area Plan: Wildlife Element

The Wildlife Element of the CDCA Plan contains objectives and goals designed to: manage federally and State listed species and their habitats; comply with existing legislation and BLM poli-

cies; provide certain species designated as sensitive by the BLM special consideration and attention in the planning process; consider the habitat of all fish and wildlife in implementing the CDCA Plan; manage representative habitats using a holistic approach; give habitats unique to the CDCA special management consideration and manage them so as to maintain their unique biological characteristics; and manage sensitive habitat using a holistic, systems-type approach. Some examples of sensitive habitats include: riparian areas, wetlands, sand dunes, relict and island habitats, washes, and important ecological zones between different major ecosystems and deserts.

The primary active wildlife management tools used in the CDCA Plan are Areas of Critical Environmental Concern (ACECs) and Habitat Management Plans (HMPs). The plan also includes a designation of Special Areas that highlights habitats and species that should receive special consideration in the environmental assessment process for all project types. Two additional designations in the Wildlife Element are Research Natural Area and Sikes Act Agreement. Research Natural Areas have been proposed in a few locations where research and education would be the primary uses. Sikes Act Agreements are cooperative agreements between the BLM and the CDFG for joint development and implementation of an HMP. The plan identified 89 special fish and wildlife areas that would receive active habitat management and/or special attention in the environmental assessment process. Twenty-eight areas were identified as ACECs solely or partially to protect fish and wildlife resources.

Northern and Eastern Colorado Desert Coordinated Management Plan/EIS

The NECO Plan/EIS provides reserve management for the desert tortoise, integrated ecosystem management for special status species and natural communities for all federal lands, and regional standards for public land health for BLM lands. The NECO Plan focuses on the conservation of species and habitats through the use of a system of large DWMAs for the desert tortoise and WHMAs for other special status species and natural communities. DWMAs and WHMAs would replace all current special designations for species and habitats. DWMAs generally coincide with current tortoise critical habitat areas, are ACECs, and feature a one percent surface disturbance limit. The focus of WHMAs is on mitigation, habitat improvements, and federal ownership. The NECO Plan/EIS also addresses designation of routes of travel, land ownership pattern, access to resources for economic/social needs, bighorn sheep management, and wild horse and burro management.

Within the project study area, there occur both a DWMA and a WHMA. The Chuckwalla DWMA is immediately west of the proposed solar facility, and covers thousands of acres in the Chuckwalla Valley. The Palen-Ford WHMA is located east and northeast of the solar facility and it overlaps slightly into the proposed solar facility boundaries.

Regional and Local Regulations

County of Riverside General Plan

The following open space policies relevant to wildlife are defined in the Desert Center Area Plan (DCAP) within the Riverside County General Plan as follows:

DCAP 10.1 Encourage clustering of development for the preservation of contiguous open space.

DCAP 10.2 Work to limit off-road vehicle use within the Desert Center Area Plan.

DCAP 10.3 Require new development to conform with Desert Tortoise Critical Habitat designation requirements.

3.4.2 Environmental Setting

The project site is located in the upper Chuckwalla Valley, on public lands administered by the BLM in unincorporated Riverside County, approximately 6 miles north of Desert Center, California. The DHSP is located in the Colorado Desert region of the larger Sonoran Desert. Section 3.3.2 provides general descriptions of the Colorado Desert region, the proposed solar facility site, and the alternative gen-tie alignments (see Figure 3.1-1 in Appendix A).

Public lands to the north and east of the proposed solar facility site are within the BLM-designated Palen-Ford WHMA, and a small section of this WHMA extends into the northern portion of the proposed solar facility site (Figure 3.4-1 in Appendix A). The Chuckwalla DWMA is located to the west of the proposed solar facility, adjacent to the western boundary of the southwestern parcel. The gen-tie Alternatives B and C would traverse the northeastern portion of this DWMA, and the southernmost portions of all gen-tie alternatives would cross into the DWMA to interconnect to the Red Bluff Substation (BLM and CDFG 2002).

DWMAs were established in the NECO Plan/EIS to address the recovery of the desert tortoise. These are stand-alone areas which cover much of the designated critical habitat for the desert tortoise. On BLM lands DWMAs are designated ACECs. While various use restrictions are imposed in these areas, the emphasis is placed on minimizing disturbance and maximizing mitigation, compensation, and restoration from authorized allowable uses. Unlike DWMAs, WHMAs address other special-status species and habitat management more generally. Management emphasis is placed on active management, specific species and habitats mitigation, and restoration from authorized allowable uses (BLM and CDFG 2002). Details of the wildlife management areas within the project study area are presented below.

Chuckwalla Desert Wildlife Management Area

The Chuckwalla DWMA was designated to protect desert tortoise as well as significant natural resources, including special-status plant and animal species and natural communities. It encompasses 818,685 acres, 465,287 acres of which (57 percent) are on BLM land. Conservative estimates based on the USGS habitat model (Nussear et al. 2009) indicate that 70 percent of the Chuckwalla DWMA is suitable desert tortoise habitat, with the remaining 30 percent unsuitable. As defined in the NECO Plan, examples of management actions to protect resources within the Chuckwalla DWMA include limitations on cumulative new surface disturbance on lands administered by the BLM within any DWMA to 1 percent of the BLM-administered portion of the DWMA, and implementing other grazing, recreation, and travel restrictions. The proposed and alternative solar facilities would be located outside the Chuckwalla DWMA, but portions of the proposed and alternative gen-tie lines would be located within portions of the DWMA (see Figure 3.4-1 in Appendix A).

Chuckwalla Critical Habitat Unit

Desert tortoise critical habitat comprises several areas (units) designated by the USFWS in 1994 (USFWS 2011a). Critical habitat is considered essential for the conservation of the desert tortoise, based on physical and biological features essential for desert tortoise survival, and requires special management considerations or protection. The Chuckwalla Critical Habitat Unit (CHU) largely, but not entirely, corresponds to the Chuckwalla DWMA, described above. The differences between the Chuckwalla DWMA and CHU are not material for purposes of this analysis. The proposed and alternative solar facilities would be located outside the Chuckwalla CHU, but portions of the proposed and alternative gen-tie lines would be located within it (see Figure 3.4-1 in Appendix A).

Palen-Ford Wildlife Habitat Management Area

As noted above, while DWMAs were established in the NECO Plan to address the recovery of the desert tortoise, WHMAs were established to address other special-status species and habitat management. The Palen-Ford WHMA was specifically established to protect the desert dunes and playas habitats (NECO sensitive habitat types) and the Mojave fringe-toed lizard (BLM and CDFG 2002).

3.4.3 Methodology

Surveys Conducted for the Desert Sunlight Solar Farm Project. The DHSP gen-tie line route Alternatives B (proposed gen-tie), C, and D conform to gen-tie line Alternatives A-1 and A-2, described and analyzed for the Desert Sunlight Solar Farm Project (DSSF) and incorporated by reference in section 1.11 (BLM 2011b). Surveys conducted for the DSSF gen-tie line Alternatives A-1 and A-2 are described in detail in the DSSF EIS (BLM 2011b) and the DSSF Biological Resources Technical Report (Ironwood 2010) and are incorporated here by reference. Relevant studies and results are summarized below:

- Prior to conducting field surveys for the DSSF, a biological resources literature search was performed to identify resources with the potential to occur along the gen-tie line routes. The study area for the gen-tie lines included a 400-foot wide study corridor to allow for some degree of flexibility during final engineering design with the assurance that the final disturbance area would be covered by the respective study areas.
- Full-coverage, protocol-level desert tortoise surveys were conducted within the entire DSSF gen-tie line study area in fall 2009 and spring 2010. Within the gen-tie line A-1 study area, 2 active burrows and 1 live tortoise were observed. Within the gen-tie line A-2 study area, 1 active burrow and no live tortoises were observed.
- A burrowing owl Phase I habitat assessment (CBOC 1993) was conducted within the DSSF gen-tie study area in 2007 and Phase II burrow surveys were conducted concurrent with desert tortoise surveys. Several suitable burrows were identified in both gen-tie study areas. In the DSSF gen-tie line A-1 study area, 1 individual burrowing owl and 2 burrows with sign of recent activity (whitewash and pellets) were identified 1,500 feet east of the intersection of the line and Highway 177. No burrowing owls or sign were recorded along gen-tie line A-2.
- An assessment was conducted on February 17, 2010 to assess potential bat habitat within the DSSF alternatives and gen-tie line routes. Eleven bat species, 5 of which are CDFG Species of Special Concern, were identified as having a potential to occur in the study area although no

bats or active roosts were observed in the study area. Bats are discussed below in Section 3.4.4 and 3.4.5.

- All wildlife species, regardless of conservation status, were recorded during surveys. Additional special-status species detected during surveys of the gen-tie line routes include the following: prairie falcon, loggerhead shrike, and round-tail ground squirrel. These species are discussed below in Section 3.4.5.

Surveys Conducted for the DHSP. A literature search was conducted to identify all special-status wildlife records known from within the DHSP study area. In addition to the literature sources listed in Section 3.3 for botanical surveys, the review included the CDFG's Special Animals List (CDFG 2011b) and Wildlife Habitat Relationship System (2012; http://www.dfg.ca.gov/biogeodata/cwhr/). Based upon review of the literature and databases, above, a list of special-status wildlife species with potential to occur in the vicinity of the project was compiled (see Table 3.4-2). Wildlife species were considered to be special-status species if they were classified as one or more of the categories listed in Table 3.4-1 below:

Table 3.4-1. Definitions Relevant to Special-Status Species Considered in the Draft EIS and Plan Amendment

Species Designation	Agency	Definition
Endangered	USFWS	A species that is in danger of extinction throughout all or a significant portion of its range.
Threatened	USFWS	Any species that is likely to become endangered within the foreseeable future throughout all or a significant portion of its range.
Candidate	USFWS	A species the USFWS has designated as a candidate for listing under Section 4 of the ESA, published in its annual candidate review, defined as defined as a species for which has sufficient information on its biological status and threats to propose it as endangered or threatened under the ESA, but for which development of a proposed listing regulation is precluded by other higher priority listing activities.
Proposed	USFWS	A species that the USFWS has proposed for listing under Section 4 of the ESA, by publishing a Proposed Rule in the Federal Register.
Protected under the federal Migratory Bird Treaty Act	USFWS	All native bird species in the U.S.
Protected under the federal Bald and Golden Eagle Protection Act	USFWS	Bald and golden eagles.
Endangered	CDFG	A native species or subspecies that is in serious danger of becoming extinct throughout all or a significant portion of its range due to one or more causes, including loss or change in habitat, overexploitation, predation, competition, or disease.
Threatened	CDFG	A native species or subspecies that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of special protection and management efforts.
Candidate	CDFG	A native species that has been officially noticed by the California Fish and Game Commission as being under review by the CDFG for addition to the threatened or endangered species lists. CDFG candidate species are given no extra legal protection under state laws.
Fully Protected (FP)	CDFG	Fully protected under the California Fish and Game Code. The CDFG may not issue take authorization except for scientific purposes or as provided under SB 618 (2011).

Table 3.4-1. Definitions Relevant to Special-Status Species Considered in the Draft EIS and Plan Amendment

Species Designation	Agency	Definition
Species of Special Concern (SSC)	CDFG	A species, subspecies, or distinct population of an animal native to California that currently satisfies one or more of the following (not necessarily mutually exclusive) criteria: • Is extirpated from the state or, in the case of birds, in its primary seasonal or breeding role; • Is listed as federally but not state threatened or endangered; • Meets the state definition of threatened or endangered but has not formally been listed; • Is experiencing or formerly experienced serious (noncyclical) population declines or range retractions (not reversed) that, if continued or resumed, could qualify it for state threatened or endangered status; or • Has naturally small populations exhibiting high susceptibility to risk from any factor(s) that if realized, could lead to declines that would qualify it for state threatened or endangered status. SSC is an administrative designation and carries no formal legal status. This designation is intended to focus attention on animals at conservation risk, to stimulate research on poorly known species, and to achieve conservation and recovery before these species meet the CESA criteria for listing. California SSC are considered under CEQA and require a discussion of impacts and appropriate mitigation to reduce impacts.
California Fish and Game Code 3503 and 3513	CDFG	All U.S. native bird species that occur in California.
Protected	CDFG	A species that is not federally or state listed, FP, or SSC, but is protected under the California Fish and Game Code. An example is the desert kit fox, which is afforded protection by the Fish and Game Code as a furbearing mammal.
NECO Plan/EIS	BLM	Special-status species that were addressed in the NECO Plan/EIS due to management concerns within the NECO Planning Area.
Sensitive	BLM	Those species (1) that are under status review by the U.S. Fish and Wildlife Service or National Marine Fisheries Service, (2) whose numbers are declining so rapidly that federal listing may become necessary, (3) those with typically small and widely dispersed populations, or (4) those inhabiting ecological refugia or other specialized or unique habitats.

Biological resources surveys were conducted within the proposed generation facility site and gen-tie line Alternative E from January 2011 through May 2012. Biological resource surveys for gen-tie line Alternatives B, C, and D were conducted in connection with the adjacent DSSF project (see below for more details). Field surveys specific to wildlife resources include general reconnaissance, desert tortoise surveys, a Mojave fringe-toed lizard habitat evaluation, and avian point-count surveys. A Biological Resources Technical Report (BRTR) and a BRTR supplement addressing gen-tie line Alternative E (Appendices C.6 and C.16 respectively) have been prepared based on the results of all field surveys and literature reviews conducted for the proposed project and alternatives to characterize the biological resources that could be directly or indirectly impacted by implementation of the DHSP. The methodology and results for assessing baseline conditions with regard to biological resources are summarized here. Please see the BRTR (Appendix C.6) and BRTR Supplement (Appendix C.16) for further details.

General reconnaissance was conducted during all field surveys for biological resources, and included identification and recording of all plant and animal species observed or otherwise detected.

Focused desert tortoise surveys were conducted during spring 2011 within the proposed solar facility site (both parcels) and spring 2012 on gen-tie line alignment Alternative E. The surveys were conducted in accordance with the current USFWS survey protocol "Preparing for Any Action That May Occur within the Range of the Mojave Desert Tortoise" (USFWS 2010a).

A Mojave fringe-toed lizard habitat evaluation was conducted within the proposed solar facility site boundaries and development footprint on February 25, March 5, and March 12, 2011, and on gen-tie line alignment Alternative E on June 25, 2012 to identify potential habitat, individuals, and/or sign that would indicate potential occupancy of the project site by this species.

Focused breeding season surveys for Gila woodpeckers were conducted throughout potential habitat (desert dry wash woodland) on the proposed solar facility site during spring 2012 by AMEC biologists (Appendix C.20).

Avian point-count surveys were conducted during winter and spring of 2011 to comply with BLM requirements. Winter season point counts were conducted during January 2011, and breeding season point counts were between March 30 and April 28, 2011.

Breeding season surveys for burrowing owls were conducted concurrently with desert tortoise surveys (above). Each burrow encountered during the desert tortoise survey was examined for sign of desert tortoise activity, as well as burrowing owl activity. These surveys provide data that are equivalent to Phase II burrow surveys (CBOC 1993).

The descriptions of regional golden eagle habitat, nest sites, territory occupancy, and winter occurrence in this document are based on the data provided in the DSSF EIS and supporting documents (BLM 2011b), winter 2011-12 field surveys by Bloom Biological Inc. (Appendix C.7), and BLM records of 2012 golden eagle activity. The DSSF Final EIS addressed active and inactive golden eagle nests within a 10-mile radius of the DSSF project and the Red Bluff Substation (incorporated by reference in Section 1.11 of this Final EIS). This 10-mile radius fully encompasses all alternatives of the DHSP project and a corresponding 10-mile radius. The 2012 golden eagle data were provided by Dr. L.F. LaPre, Wildlife Biologist, BLM California Desert District.

Aspen Environmental Group (Aspen) biologists evaluated suitability for seasonal Couch's spadefoot breeding habitat on the project site and gen-tie line Alternative E, based on soils and topography observed during vegetation mapping and streambed delineation field work, described in Section 3.3. Desert kit fox and American badger burrows and sign were noted during desert tortoise surveys and subsequent vegetation mapping and streambed delineation field work, but there were no additional field surveys dedicated to locating these species.

3.4.4 General Wildlife

Below is a description of the common wildlife species that either have been observed or are expected to occur in the habitat types found within the project site and surrounding area. These habitat types correspond to the vegetation communities described in Section 3.3.5.

Creosote Bush Scrub (Sonoran Desert Scrub)

Reptiles observed in the Creosote Bush Scrub (Sonoran Desert Scrub) habitat during field surveys at the generation facility site and along the gen-tie alternatives include desert horned lizard

(*Phrynosoma platyrhinos*), zebra-tailed lizard (*Callisaurus draconoides*), desert iguana (*Dipsosaurus dorsalis*), sidewinder (*Crotalus cerastes*), and Great Basin whiptail (*Aspidoscelis tigris tigris*).

Bird species observed during field surveys in this habitat, or foraging over it, include black-throated sparrow (*Amphispiza bilineata*), Gambel's quail (*Callipepla gambelii*), common raven (*Corvus corax*), red-tailed hawk (*Buteo jamaicensis*), and turkey vulture (*Cathartes aura*).

Mammal species observed or detected in desert scrub habitat during surveys include coyote (*Canis latrans*), American badger (*Taxidea taxus*), desert kit fox (*Vulpes macrotis arsipus*), black-tailed jackrabbit (*Lepus californicus*), round-tailed ground squirrel (*Spermophilus tereticaudus*), desert woodrat (*Neotoma lepida*), and kangaroo rat (*Dipodomys* sp.). Small mammals detected during small mammal trapping at the adjacent DSSF site, and also expected to occur on the proposed solar facility site, include long-tailed pocket mouse (*Chaetodipus formosus*), Merriam's kangaroo rat (*Dipodomys merriami*), spiny pocket mouse (*Perognathus spinatus*), little pocket mouse (*P. longimembris*), and desert woodrat (BLM 2011b).

Blue Palo Verde–Ironwood Woodland (Desert Dry Wash Woodland)

The Blue Palo Verde–Ironwood Woodland on the site is equivalent to desert dry wash woodland addressed in the NECO Plan. This vegetation type provides greater food, nesting, and cover resources, and wildlife diversity is generally greater than in the surrounding desert, though many of the same species are present. The Blue Palo Verde–Ironwood Woodland (Desert Dry Wash Woodland) in the project study area supports common bird species characteristic of the surrounding desert habitats as well as birds that prefer woodlands. Verdin (*Auriparus flaviceps*) was the most commonly encountered bird in this community on the site in both winter and spring. Other representative species include ash-throated flycatcher (*Myiarchus cinerascens*), black-tailed gnatcatcher (*Polioptila melanura*), mourning dove (*Zenaida macroura*), and non-breeding white-crowned sparrow (*Zonotrichia leucophrys*). Desert dry wash woodlands are particularly important as stopover feeding habitat for many migratory bird species, due to the very high insect productivity in these habitats.

Reptiles and small mammals observed and/or expected in this community are the species listed above for Creosote Bush Scrub (Sonoran Desert Scrub). Desert dry wash woodland attracts foraging bats, such as pallid bats (*Antrozous pallidus*) and California myotis (*Myotis californicus*), due to increased insect concentration. Hoary bats (*Lasiurus cinereus*) will roost in palo verde and ironwood trees. Large mammal species can use desert dry washes and include special-status species such as bighorn sheep (*Ovis canadensis*) and burro deer (*Odocoileus hemionus eremicus*).

Disturbed Areas

Disturbed, ruderal, and non-vegetated areas provide habitat for opportunistic wildlife species. These areas typically offer little cover or food resources, but ground-dwelling species may frequently cross them or incorporate them into their home-ranges. House sparrows (*Passer domesticus*) and house finches (*Carpodacus mexicanus*) often nest on structures or ornamental trees. Red-tailed hawks (*Buteo jamaicensis*) and common ravens frequently nest on the steel lattice towers of transmission lines and feed opportunistically on road-killed animals (ravens) or live

prey such as reptiles and small mammals in open, disturbed areas. Coyotes may also take advantage of these habitats.

3.4.5 Special-Status Wildlife Species

Based on a review of database records, results of surveys for nearby projects, published literature, project surveys, and habitats present in the project study area, a list of special-status wildlife species that could occur or are known to occur in the project area was prepared. Table 3.4-2 lists all special-status wildlife species potentially occurring on the project site or vicinity, and evaluated in the analysis presented here. Further descriptions of these species and their potential occurrence in the area follow Table 3.4-2. Figure 3.4-2 in Appendix A identifies the locations of special-status wildlife species observed or detected during project surveys. These discussions are based on the BRTR (Appendices C.6 and C.16) and other pertinent sources. The potential for occurrence was assessed based on the following criteria:

- **Present**: Taxon (species or subspecies) was observed during surveys or has been documented in the project study area previously.
- **High:** The taxon has been documented within the project study area (5-mile radius) and suitable environmental conditions such as soil type are found within the project area; but the taxon was not detected during project-specific biological surveys.
- **Moderate:** Either the taxon has been documented within the project study area (5 miles), or suitable environmental conditions such as soil type are found within the project area, and the project site is within its known geographic range.
- **Low:** There are no records of the taxon within the project study area (5 miles), the environmental conditions are marginal, and/or the taxon is conspicuous and was not detected during biological surveys.
- **Not Likely to Occur:** No known records exist and the project study area lacks suitable habitat requirements (including soil and elevation factors).

Table 3.4-2. Special-Status Wildlife Present or with Potential to Occur in the Project Study Area

Species	Status	Habitat	Potential to Occur
AMPHIBIANS			
Scaphiopus couchi Couch's spadefoot	Federal: none BLM: Sensitive, NECO State: SSC	Breeds in seasonal rain pools following summer rains; burrows in sand remainder of year; eastern Colorado Desert, generally close to Colorado River	Low. No potential rain pool habitat on solar facility site, rare roadside pools to south; margin of geographic range.
REPTILES			
Gopherus agassizii (Xerobates agassizi) Agassizi's Desert tortoise	Federal: Threatened BLM: NECO State: Threatened	Desert shrublands where soil suitable for burrows; Mojave and Sonoran deserts (E Calif, S Nevada, W Arizona, and Sonora, Mexico)	High. No recent sign was detected on site, but there are known occurrences in the vicinity.

Table 3.4-2. Special-Status Wildlife Present or with Potential to Occur in the Project Study Area

Species	Status	Habitat	Potential to Occur
Heloderma suspectum cinctum Banded Gila monster	Federal: none BLM: Sensitive State: SSC	Rocky outcrops in desert shrub-land; scarce in scattered east-ern mountain ranges of Calif deserts; to S Nevada, W Arizona, and mainland Mexico	Not Likely to Occur. No verified records in the vicinity, and bajada habitat is not likely to be suitable for this species.
Phrynosoma mcallii Flat-tailed horned lizard	Federal: none BLM: Sensitive, NECO State: SSC	Sandy desert washes, flats, and dunes; Coachella Valley southward to N Baja Calif	Not Likely to Occur. Outside of known range and habitat on site is marginal.
Sauromalus obesus (S. ater) Chuckwalla	Federal: none BLM: NECO State: none	Rocky outcrops in desert shrub-land; throughout deserts of Calif, S Nevada, W Arizona, and Baja Calif	Low. No suitable bedrock outcrops; habitat marginal.
Uma notata Colorado Desert fringe-toed lizard	Federal: none BLM: Sensitive, NECO State: SSC	Sand, especially dunes, sandy hummocks, washes, stabilized sand flats; southern Colorado Desert, Imperial Valley, SW Arizona, adjacent Mexico	Not Likely to Occur. Outside of known range and habitat on site is marginal.
Uma scoparia Mojave fringe-toed lizard	Federal: none BLM: Sensitive, NECO State: SSC	Sand, especially dunes, sandy hummocks, washes, stabilized sand flats; below sea level to about 3000 ft elev; Death Valley, SW to Antelope Valley and SE to W Arizona	Low (solar facility site and gen-tie Alts B, C, & D). Marginal habitat; no extensive areas of sandy substrates that could support this species. Present (gen-tie Alt E). Observed in sand dune habitats along this alignment.
Charina trivirgata (Lichanura trivirgata) Rosy boa	Federal: none BLM: NECO State: none	Rocky chaparral and desert shrubland; generally below about 4500 ft elev; S Calif through Baja Calif, SW Arizona, and western Sonora	High. Suitable habitat occurs throughout project area.
BIRDS			
Accipiter cooperii Cooper's hawk	Federal: none BLM: none State: Watch List	Nests and hunts in forest & woodland, also forages in open areas; most of U.S., Central and S America	High: Wintering/migration only; not likely to nest in project area (no habitat).
Accipiter striatus Sharp-shinned hawk	Federal: none BLM: none State: Watch List	Nests and hunts in forest & woodland mainly to N (may breed in S Calif Mtn wood-lands); also forages in open areas; regularly winters in S Calif	Present: Observed wintering on site (January 2011). Not likely to nest in project area (no habitat, outside breeding range).
Aquila chrysaetos Golden eagle	Federal: BGEPA, BCC BLM: Sensitive, NECO State: FP, Watch List	Nests in remote trees and cliffs; forages over shrublands and grasslands; breeds throughout W N America, winters to E coast	High. Foraging only (year round). While this species nests in surrounding mountains, no suitable nesting habitat occurs on site.
Asio flammeus Short-eared owl	Federal: none BLM: none State: SSC	Breeds in marshes and densely vegetated wetlands, forages over open wetlands, ag fields, and grasslands; temperate N & S America, Eurasia	Low. No suitable breeding or foraging habitat; marginal wintering habitat.

Table 3.4-2. Special-Status Wildlife Present or with Potential to Occur in the Project Study Area

Species	Status	Habitat	Potential to Occur
Asio otus Long-eared owl	Federal: none BLM: none State: SSC	Breed in riparian woodlands; forage (nocturnally) over open land; sea level to about 6000 ft elev; through N America and Eurasia	Moderate. Occurs at Lake Tamarisk during winter; may forage over the project area. Not likely to nest in project area (no habitat).
Athene cunicularia (Speotyto cunicularia) Burrowing owl	Federal: BCC BLM: Sensitive, NECO State: SSC	Nests mainly in rodent burrows, usually in open grassland or shrubland; forages in open habitat; increasingly uncommon in S Calif; occurs through W U.S. and Mexico	Present (migration/winter season). Observed on site in September 2011. Not observed during breeding season surveys.
Buteo regalis Ferruginous hawk	Federal: BCC BLM: NECO State: Watch List	Forages over grassland and shrubland; winters in W and SW N Amer (breeds in Great Basin and N plains)	High. Wintering/migration only; not likely to nest in project area (outside breeding range).
Buteo swainsonii Swainson's hawk	Federal: BCC BLM: Sensitive State: Threatened	Breeds in trees in open habitats (e.g., grassland), Central Valley (Calif) and east to central U.S., S Canada, N Mexico; winters in S America. A few nesting records in W Mojave Desert (e.g., Lancaster area)	Present. Occasionally flies over project area during migration. Not likely to nest in project area (outside breeding range; no suitable nesting habitat).
Chaetura vauxi Vaux's swift	Federal: none BLM: none State: SSC	Breeds central Calif and northward, in coastal and montane forests; winters in Central and S America	Present. Occasionally flies over project area during migration. Not likely to nest in project area (outside breeding range; no suitable nesting habitat).
Charadrius montanus Mountain plover	Federal: BCC BLM: Sensitive, NECO State: SSC	Short sparse grasslands, plowed fields, open sagebrush and foothill valley floors; winter through W Calif and south into Mexico, primarily in Sacramento, San Joaquin, and Imperial Valleys.	Low. Outside breeding range; winter foraging habitat poorly suitable due to high shrub cover. NECO Plan identifies wintering habitat in agricultural areas just south and east of the project site.
Circus cyaneus Northern harrier	Federal: none BLM: none State: SSC	Breeds colonially in grasslands and wetlands; forages over open terrain; N America and Eurasia	Low. May forage on site in winter. Not likely to nest in project area (no habitat).
Falco columbarius Merlin	Federal: none BLM: none State: Watch List	Uncommon in winter in S Calif desert and valleys (breeds in northern N America and Eurasia)	High. Wintering/migration only; not likely to nest in project area (outside breeding range).
Falco mexicanus Prairie falcon	Federal: BCC BLM: NECO State: Watch List	Nests on high cliffs, forages primarily over open lands; occurs throughout arid western U.S. and Mexico	Present. Foraging only (year round). While this species nests in surrounding mountains, no suitable nesting habitat occurs on site. Observed in May 2012 during surveys of Alternative E.
Falco peregrinus American peregrine falcon	Fed: BCC (former END) BLM: none Calif: FP (former END)	Nests on high cliffs, generally near water bodies; feed on birds (esp. shorebirds & waterfowl); widespread but rare worldwide	Not Likely to Occur (except as infrequent flyover). No suitable nesting or foraging habitat.
Lanius ludovicianus Loggerhead shrike	Federal: BCC BLM: none State: SSC	Woodlands, shrublands, open areas with scattered perch sites; not dense forest; widespread in N America; valley floors to about 7000 ft elev	Present. Recorded throughout project site during avian point count surveys. Suitable habitat occurs throughout project area.

Table 3.4-2. Special-Status Wildlife Present or with Potential to Occur in the Project Study Area

Species	Status	Habitat	Potential to Occur
Melanerpes uropygialis Gila woodpecker	Federal: BCC BLM: NECO State: Endangered	Saguaro woodlands, sometimes other woodlands; cavity nester mainly in cactus; SE Calif, S Arizona, W Mexico (incl. Baja)	Present. Foraging only; recorded on site in winter (January 2011). Not likely to nest on site (no suitable habitat).
Aphelocoma californica cana Scrub jay (Eagle Mountains population)	Federal: none BLM: none State: CDFG watch list	Locally endemic year-around resident in pinyon woodlands in the Eagle Mountains; long-disjunct from other populations	Present. Observed as transient, Oct 2011.
Oreothlypis luciae (Vermivora luciae) Lucy's warbler	Federal: BCC BLM: Sensitive State: SSC	Cavity-nesting species; breeds in desert riparian woodlands through much of Arizona; winters on Pacific Coast of mainland Mexico	Present. Recorded on site during migration. Not likely to nest on site (outside known range; nest cavities unavailable).
Pandion haliaetus Osprey	Federal: none BLM: none State: Watch List	Nests in northern N America and Mexican coastlines near large water bodies, preys primarily on fish; winters in central Calif to S America;	Present. Occasionally flies over project area during migration. Not likely to nest in project area (outside breeding range; no suitable nesting habitat).
Polioptila melanura Black-tailed gnatcatcher	Federal: None BLM: None State: Special Animal	Desert shrublands, gen. nests in shrub thickets along washes; occas. in open scrub (esp. in winter); Calif. deserts, to W Texas, Baja, and central Mexico	Present. Observed during point count surveys on site, and along Alternative E.
Pyrocephalus rubinus Vermilion flycatcher	Federal: none BLM: NECO State: SSC	Desert riparian woodlands and shrublands; SE Calif, east through S Texas, and S through Mexico; winters in Mexico	Low. Marginal nesting habitat occurs in ironwood stands on site.
Spizella breweri Brewer's sparrow	Federal: none BLM: none State: Special Animal (nesting)	Much of western N America; nests in arid montane shrublands and grasslands (sagebrush scrub, etc.); winters in lower elev shrublands	Moderate (winter). Suitable wintering habitat throughout the area. Not expected during breeding season due to habitat and elevation.
Toxostoma bendirei Bendire's thrasher	Federal: BCC BLM: Sensitive, NECO State: SSC	Joshua tree woodland, desert scrub; high cactus cover; mainly E Mojave Desert in Calif (scarce in W Mojave); American SW and mainland Mexico; winters in S Arizona, New Mexico, and mainland Mexico	Low-moderate. Marginally suitable habitat occurs throughout project area. Nearest record is 6.5 miles south of the project site.
Toxostoma crissale Crissal thrasher	Federal: none BLM: NECO State: SSC	Nests in dense, low, brushy thickets of mesquite or other desert riparian shrubs; Sonoran Desert, E Mojave Desert to Texas, W mainland Mexico	Low. Habitat on site is marginally suitable for nesting, foraging.
Toxostoma lecontei Le Conte's thrasher	Federal: BCC BLM: NECO State: SSC	Calif deserts, SW Central Valley & Owens Valley, E to Utah, Arizona; open shrubland, often sandy or alkaline flats	High. Suitable habitat occurs throughout project area. Nearest record is 6.5 miles south of the project area.

Table 3.4-2. Special-Status Wildlife Present or with Potential to Occur in the Project Study Area

Species	Status	Habitat	Potential to Occur
MAMMALS			
Antrozous pallidus Pallid bat	Federal: none BLM: Sensitive, NECO State: SSC	Rock outcrops of shrublands, mostly below about 6000 ft elev; Calif, SW N Amer through interior Oregon and Washington; hibernates in winter	High. Likely to forage on site; low potential for roosting (minimal potential roosting habitat). Nearest record is 11 miles south of the project site.
Corynorhinus (Plecotus) townsendii Townsend's big-eared bat (including subspecies)	Federal: none BLM: Sensitive, NECO State: SSC	Many habitats throughout Calif and W N Amer, scattered pop-ulations in E; day roosts in caves, tunnels, mines; feed primarily on moths	High. Likely to forage on site; low potential for roosting (minimal potential roosting habitat).
Euderma maculatum Spotted bat	Federal: none BLM: Sensitive State: SSC	Desert (cool seasons) to pine forest (summer), much of SW N Amer but very rare; roosts in deep crevices in cliffs, feeds on moths captured over open water	Low. Marginal roosting or foraging habitat on site.
Eumops perotis californicus California mastiff bat	Federal: none BLM: Sensitive, NECO State: SSC	Lowlands (with rare exceptions); central and S Calif, S Arizona, NM, SW Texas, N Mexico; roost in deep rock crevices, forage over wide area	High. Likely to forage on site; low potential for roosting (minimal potential roosting habitat). Nearest record is 11 miles south of sol facility site.
Lasiurus xanthinus (Nycteris ega xanthina) Western (Southern) yellow bat	Federal: none BLM: none State: SSC	Mexico and Central America, to S Arizona; Riverside, Imperial, and San Diego Counties; riparian and wash habitats; in roosts trees; evidently migrates from Calif during winter	High. Likely to forage on site; low potential for roosting (minimal potential roosting habitat).
Macrotus californicus (M. waterhousii) California leaf-nosed bat	Federal: none BLM: Sensitive, NECO State: SSC	Arid lowlands, S Calif, S and W Arizona, Baja Calif and Sonora, Mexico; roost in mineshafts, forage over open shrublands	High. Likely to forage on site; low potential for roosting (minimal potential roosting habitat). Nearest records are 6 miles northwest of solar facility, roosting at various mines in Eagle Mountains.
Nyctinomops macrotis (Tadarida molossa) Big free-tailed bat	Federal: none BLM: none State: SSC	Roosts in crevices of rocky cliffs, scattered localities in W N America through Central America; ranges widely from roost sites; often forages over water	High. Likely to forage in the project area, but low potential for roosting on site (lack of potential roost sites).
Nyctinomops femorosaccus (Tadarida femorosaccus) Pocketed free-tailed bat	Federal: none BLM: NECO State: SSC	Deserts and arid lowlands, SW U.S., Baja Calif, mainland Mexico; Roost mainly in crevices of high cliffs; forage over water and open shrubland	High. Likely to forage in the project study area, but low potential for roosting on solar facility site (lack of potential roost sites).
Xerospermophilus tereticaudus chlorus Palm Springs round-tailed ground squirrel	Federal: none BLM: Sensitive State: SSC	Widespread in Calif deserts, Coachella Valley to Death Valley; formerly considered endemic to mesquite and sandy habitats in Coachella Valley	Present. Reported on solar facility site and near gen-tie Alternatives B and C.

Table 3.4-2. Special-Status Wildlife Present or with Potential to Occur in the Project Study Area

Species	Status	Habitat	Potential to Occur
Neotoma albigula venusta Colorado Valley woodrat	Federal: none BLM: NECO State: none	Desert shrublands; SE Calif, SW Arizona, adjacent Mexico, and southernmost Nevada; closely associated with beaver-tail or mesquite thickets	Low. Marginal habitat on site. Nearest record is 12 miles southeast of solar facility near Corn Spring campground.
Bassariscus astutus Ring-tailed cat	Federal: none BLM: none State: FP	Most of Calif and the SW U.S., to tropical Mexico; forests, wood-lands, deserts; nocturnal; dens in burrows, trees, or rock crevices; in deserts, found on steep rocky slopes and boulderfields	Not Likely to Occur. No suitable denning habitat.
Taxidea taxus American badger	Federal: none BLM: none State: SSC	Mountains, deserts, interior valleys where burrowing animals are avail as prey and soil permits digging; throughout central and W N America	Present. Burrows recorded on site; expected in low numbers throughout project area.
Vulpes macrotis arsipus Desert kit fox	Federal: none BLM: none State: Protected	Widespread, open desert lands; constructs below-ground dens; requires soil suitable for burrow-ing; primarily nocturnal; preys on small mammals	Present. Numerous burrows recorded on site.
Felis concolor browni Yuma mountain lion	Federal: none BLM: NECO State: SSC	Low desert, Joshua Tree National Park, to Colorado River; primarily in dense ripar-ian habitats of river and dense desert wash scrub of canyons, where water and prey are available	High. Expected in low numbers throughout the project study area.
Odocoileus hemionus eremicus (O. h. crooki) Desert mule deer, burro deer	Federal: none BLM: NECO State: none	Colorado desert, scattered mountains and bajadas, generally near dependable water sources	High. Expected in low numbers throughout the project study area.
Ovis canadensis nelsoni Nelson's bighorn sheep, Desert bighorn sheep	Federal: none BLM: Sensitive, NECO State: none	Open shrublands and conifer forest, remote mountains; scattered populations in desert mountains and surrounding ranges, incl Transverse and Peninsular ranges	High. Animals may pass through solar facility site and gen-tie alternatives to move among neighboring mountain ranges (Eagle, Coxcomb, Chuckwalla, Granite, and Northern Palen Mountains).

Federal:
BCC – USFWS Bird of Conservation Concern
Delisted – No longer federally listed due to recovery
BGEPA – Protected under the Bald and Golden Eagle Protection Act

BLM:
Sensitive – Species requiring special management consideration to promote their conservation and reduce the likelihood and need for future listing under the ESA.
NECO – Special-status species that were addressed in the NECO Plan/EIS due to management concerns within the NECO Planning Area.

State:
SSC – CDFG Species of Special Concern
FP – CDFG Fully Protected
Watch List – The birds on this watch list are 1) not on the current species of special concern list but were on previous lists and have not been listed under the California ESA; 2) were previously State or federally listed and now are on neither list; or 3) are on the list of FP species.
Delisted – No longer State listed due to recovery
Special Animal – Taxa is tracked in the CNDDB but is not designated with any other special status at the State or federal level.
Source: CNDDB 2011; BLM and CDFG 2002; CDFG 2011; BLM 2011b, 2011c, 2010a, and 2010b.

No special-status invertebrates are reported from the project vicinity. Although not assigned any special regulatory status, the desert leaf-cutting ant (*Acromyrmex versicolor*) is an unusual insect that has been reported from the Chiriaco Summit area and eastern Imperial County. These are the only documented California locations, though it is more widespread in Arizona, Texas, and Mexico. It has no agency-designated conservation status, but is unusual because it is the only leafcutter ant in the state. It may occur in desert dry wash woodland on the site, though no habitat evaluation or focused surveys for invertebrates were conducted.

Amphibians

Couch's Spadefoot (Scaphiophus couchii)

Couch's spadefoot, a toad-like amphibian, is a BLM Sensitive Species and CDFG Species of Special Concern. Like other spadefoot species, it is an amphibian with appearance and life history characteristics similar to the true North American toads (*Anaxyrus* [*Bufo*] ssp.) but distinguished from that genus by several characteristics, especially the thickened sharp-edged "spades" on the hind feet, used for burrowing (Stebbins 2003). Couch's spadefoot is almost entirely terrestrial. It is dormant in burrows 20 to 90 centimeters deep for 8 to 10 months of the year (Jennings and Hayes 1994). It is active on the surface only during periods following warm summer rains, when it emerges to feed on insects and to reproduce. Successful reproduction requires warm rain pools which must hold water while the eggs hatch and the tadpoles develop, and then metamorphose into juvenile spadefoots. During field surveys of hydrologic features throughout the project area, biologists looked for soil and topographic conditions that could provide potential for extended pooling, which might indicate suitable breeding habitat for Couch's spadefoot. There is no potential breeding habitat on the proposed solar facility site. The only potential pools seen in the vicinity are on roadsides, where road crossings impede flow. In some cases, roadside impoundments are within or near the proposed or alternative gen-tie lines. Even in these cases, the potential for Couch's spadefoot occurrence in the area is low due to disturbance and degradation by vehicles of roadside impoundments.

Reptiles

Agassiz's Desert Tortoise (Gopherus agassizii)

Agassiz's desert tortoise is listed as threatened under CESA, and the Mojave population (i.e., west of the Colorado River) is listed as threatened under the federal ESA. East of the Colorado River, Morafka's desert tortoise range extends into the Arizona deserts, and south through Sonora (Mexico). Recent evidence suggests that these two desert tortoise populations are distinct species (Murphy et al. 2011). All wild desert tortoises in California are part of the state and federally listed Mojave population (*Gopherus agassizii*).

The proposed solar facility site is not within designated critical habitat for the desert tortoise, but portions of each of the gen-tie line alternative alignments are within the Chuckwalla CHU, east of Kaiser Road in the vicinity of Interstate 10 (see Figure 3.4-1 in Appendix A).

The nearest documented desert tortoise locations are on the DSSF Solar Farm project site, north of the proposed DHSP solar facility site and at the Red Bluff Substation site (BLM 2011b). Tortoises and recent sign were found on the DSSF site, about 0.3 miles north of the proposed solar facility site, and along the gen-tie Alternatives B and C (BLM 2011b). In addition, a road-

killed desert tortoise was observed at the Eagle Mountain off ramp on eastbound Interstate 10 approximately 7.5 miles southwest of the site (see the BRTR in Appendix C.6 for more details).

The USFWS reviewed desert tortoise biology and population status in the recent Revised Recovery Plan (USFWS 2011a). The following summary is based on that review and literature cited therein. Desert tortoises spend much of their lives in burrows. They enter hibernation during autumn. In late winter or early spring, they emerge from over-wintering burrows and typically remain active or partially active through fall. Activity decreases in summer, but tortoises often emerge after summer rain storms to drink and to take advantage of seasonal food availability during the few weeks following late summer rains. They may become dormant during extended periods of summer heat and dryness. A single tortoise may have a dozen or more burrows within its home range, and different tortoises may use these burrows at different times. Even during their active seasons, they are inactive during much of the day or night, within burrows or at "palettes" (partially sheltered flattened areas, often beneath shrubs or large rocks) or other shaded sites.

Adult desert tortoises lose water at such a slow rate that they can survive for more than a year without access to free water of any kind and can apparently tolerate large imbalances in their water and energy budgets. During periods of inactivity, their metabolism and water loss are reduced. Desert tortoises eat a wide variety of herbaceous vegetation, particularly grasses and the flowers of annual plants.

Desert tortoise habitats include many landforms and vegetation types of the Mojave and Sonoran Deserts, except the most precipitous slopes. Friable soils, such as sand and fine gravel, are important for burrow excavation and nesting, and the availability of suitable soils is a limiting factor to desert tortoise distribution. Dissected alluvial fans and upper bajadas are often considered important habitat areas, thought habitat modeling by USGS (Nussear et al. 2009) indicate relatively low quality habitat on the proposed solar facility site.

The sizes of desert tortoise home ranges vary with respect to location and resource availability, and may vary among years. Male tortoises' home ranges can be as large as 200 acres, while females' long-term home ranges may be less than half that size. Core areas used within tortoises' larger home ranges depend on the number of burrows. Over its lifetime, a desert tortoise may use more than 1.5 square miles of habitat and may make periodic forays of several miles at a time.

Tortoises are long-lived and grow slowly. They require 13 to 20 years to reach sexual maturity. Their reproductive rates are low, though their reproductive lifespan is long. Mating may occur both during spring and fall. The number of clutches (set of eggs laid at a single time) and number of eggs that a female desert tortoise produces is dependent on habitat quality, seasonal food and water availability, and the animal's physiological condition. Egg-laying occurs primarily between April and July; the female typically lays 2-14 (average 5-6) eggs, which are buried near the mouth of a burrow or beneath a shrub. The eggs typically hatch 90 to 120 days later, between August and October. Clutch success rates are unknown and nest predation rates are variable, but predation appears to be an important cause of clutch failure.

Desert tortoise population trends have been difficult to discern. The USFWS (2011a) reviews population monitoring efforts dating back to the 1980s, and concludes that available data provide qualitative (not quantitative) insight to range-wide trends, and show appreciable declines at the

local level in some areas. A more formal and consistent range-wide monitoring study was initiated in 2001, but no range-wide trend has been identified over that period.

Desert tortoise populations are threatened by several factors, each of which tends to be exacerbated by the others and most of which are associated with human land uses and other human activities. Most threats identified in the 1980s as the basis for state and federal listing continue to affect tortoise populations today. Habitat degradation and loss due to land use conversion, grazing, mining, energy development, and transportation projects have all contributed to declining tortoise numbers and fragmented populations. Off-road vehicle use degrades habitat and causes direct mortality from vehicle collision or crushed burrows. Desert tortoises are also vulnerable to vehicle collisions on roads and highways. Drought, habitat degradation, and associated weed invasion lead to reduced nutrient quality of food plants; this increases desert tortoise susceptibility to upper respiratory tract disease, and possibly other diseases, which can be fatal and transmittable among populations. Juvenile tortoises are vulnerable to predation by ravens, and both juvenile and adult tortoises are preyed upon by coyotes and domestic and feral dogs. Since infrastructure development and urbanization creates perch sites and food and water sources for ravens, and typically increases the numbers of dogs and coyotes in a given area, those activities tend to elevate predation pressure on tortoises. Other factors affecting tortoises and their habitat include illegal collecting, vandalism, livestock grazing, feral burros, invasive non-native plants, changes to natural fire regimes, and environmental contaminants. Habitat fragmentation and development can isolate tortoise populations, further increasing risk of disease and reducing genetic diversity. This range of threats can kill or indirectly affect desert tortoises and their habitat, but little is known about the relative contribution each threat makes to tortoise demography. Current recovery planning (USFWS 2011a) focuses on expanding the knowledge of individual threats and places emphasis on understanding their multiple and combined effects on tortoise populations.

The USFWS (2011a) identifies five recovery units for the desert tortoise based largely on geographic discontinuities or barriers that coincide with observed variation among tortoise populations. The DHSP alternatives are located in the Colorado Desert Recovery Unit.

No live desert tortoises or recent sign were observed within the survey area for the proposed solar facility or gen-tie alignment Alternative E. However, several desert tortoise burrows, designated as Class 2 (good condition) and Class 3 (deteriorated condition), and several disarticulated bone fragments, possibly originating from a desert tortoise, were located. None of the burrows or other sign exhibited any evidence of recent use or corroborating sign. However, desert tortoises are generally found throughout the region where the solar facility would be located. Moreover, based on the presence of active desert tortoises on the adjacent DSSF project site and associated gen-tie alignments, it is assumed that the entire solar facility site and all gen-tie line alternative alignments might be occupied by desert tortoises at any time, albeit only in low numbers.

Mojave Fringe-Toed Lizard (Uma scoparia)

The range of the Mojave fringe-toed lizard is almost exclusively limited to California, in southernmost Inyo, San Bernardino, and eastern Riverside Counties, although it has been recorded in western Arizona as well (Jennings and Hayes 1994). It is a CDFG Species of Special Concern and a BLM Sensitive Species. One genetic lineage of the species, associated with the

Amargosa River drainage system, is under review for federal listing as a threatened or endangered population. The southern lineage is more widespread, ranging through the Mojave River drainage system, Bristol Trough, Clark's Pass (including the Chuckwalla Valley, Palen Lake, and Pinto Wash), and the Colorado River sand transport systems.

The Mojave fringe-toed lizard is related to two other special-status species: the Colorado Desert fringe-toed lizard (*U. notata*), a BLM Sensitive Species that is found farther to the south; and the Coachella Valley fringe-toed lizard (*U. inornata*), a federally listed threatened and state listed endangered species endemic to the Coachella Valley, west of the project study area. In addition, the flat-tailed horned lizard (*Phrynosoma mcallii*) is a special-status species of similar habitats, but its geographic range is also well south of the project study area.

The Mojave fringe-toed lizard is primarily insectivorous. It hibernates during winter and emerges from hibernacula in March or April. During April and May, while temperatures are relatively cool, it is active during mid-day; during summer, it is active in mornings and late afternoon, but seeks cover during the hottest parts of the day. It is primarily found in fine, loose, aeolian (windblown) sand habitat. Availability of soft sand is an essential habitat component, though the lizards will also use other substrates in the areas surrounding aeolian sands. The Mojave fringe-toed lizard burrows in the sand to avoid predators and to thermoregulate, and lays its eggs in sand. Sand dunes are its primary habitat, although it also uses sands and surrounding habitats at the margins of dry lakebeds, washes, and isolated blows and pockets against hillsides, and mixed habitat such as hummocks or pockets of soft sand interspersed with hard-packed sand and less suitable densities and composition of vegetation.

The Mojave fringe-toed lizard is widespread in the Mojave and northern Colorado Deserts, but its distribution is patchy, reflecting the discontinuous distribution of windblown sand habitat. Some local populations consist of only a few animals in small, isolated habitat patches. This fragmented distribution leaves local populations vulnerable to extirpation from habitat disturbance, further fragmentation, or stochastic events. Aeolian sand habitat is vulnerable to direct and indirect disturbances. Environmental changes that stabilize sand, affect sand sources, or block sand movement corridors will, in turn, affect Mojave fringe-toed lizard habitat and populations. Threats to Mojave fringe-toed lizards and their habitat include habitat loss or damage from urban and agricultural development, vehicles, and indirect effects such as invasive weeds and increased habitat access by common ravens or other predators. Another important indirect disturbance is the potential disruption of sand sources for the dune systems. Dune habitat that is cut off from its sand source will degrade over time as finer sands are blown away, leaving behind smaller dunes composed of coarser-textured sand.

The proposed solar generation facility site and gen-tie Alternatives B, C, and D do not appear to provide suitable habitat for Mojave fringe-toed lizard (Black 2011; see Appendix C.13). Ephemeral washes and channels throughout these areas provide patchy alluvial sand habitats, but the sand is often cemented or compacted, and the sand depth and coarse texture are poorly suitable for Mojave fringe-toed lizard. There are few areas where deeper, loose sand is present on site; these are isolated and associated with ephemeral washes. However, portions of gen-tie Alternative E would cross occupied Mojave fringe-toed lizard habitat along the western margin of the dune system at the bases of the Coxcomb Mountains. The animals were observed along portions of Alternative E during field surveys for the DSSF project (BLM 2011b) and for the DHSP (Appendix C.16, BRTR Supplement).

Rosy Boa (Charina trivirgata)

The rosy boa occurs in rocky shrublands from sea level to about 6,700 feet elevation. In the coastal regions, it is found south and west of the major mountain chains, in the interior valleys and mountains of Los Angeles, Riverside, San Bernardino, and Orange counties, southward to the coast in San Diego County and Baja California. In the deserts, rosy boas range throughout most of the Mojave Desert and much of the Colorado Desert, eastward into Arizona. They are active during warm seasons, and are primarily nocturnal. The CDFG's Natural Diversity Database (CNDDB) considers rosy boa a "special animal" but it has no formal status under state or federal Endangered Species Acts or any other special-status designation. While the DHSP's study area is within the general geographic range of the rosy boa, and therefore the site could potentially be occupied at low density, the habitat actually observed at the proposed solar facility site and gen-tie alignment alternatives is generally suitable for rosy boa, but lacks the boulders or rock crevices of its primary habitat.

Birds

Golden Eagle (Aquila chrysaetos)

Golden eagles are protected under the BGEPA, are a BLM Sensitive Species, and considered a bird of conservation concern by the USFWS. They are also Fully Protected in California, and are covered under the MBTA and California Fish and Game Code. Golden eagles are year-round residents throughout most of their range in the western United States. In the southwest, they are more common during winter when eagles that nest in Canada migrate south into the region. They breed from late January through August, mainly during late winter and early spring in the California deserts. In the desert, they generally nest in steep, rugged terrain, often on sites with overhanging ledges, cliffs or large trees that are used as cover. Golden eagles are wide-ranging predators, especially outside of the nesting season, when they have no need to return daily to eggs or young at their nests. The mountain ranges surrounding the proposed solar facility site provide suitable golden eagle nesting and foraging habitat. Golden eagle nesting territories generally comprise several nests within a given area. In any given year, the eagles may initiate nesting behavior (e.g., "nest decorating") at one nest, without any activity at the other nests. The eagles may complete breeding by laying eggs and raising chicks, or may abandon the nest without laying eggs or successfully raising young. In any given year, all or most nests in a territory may be inactive, but eagles may return in future years to nest at previously inactive sites. Eight inactive golden eagle nests were documented in the DSSF Final EIS and its appendices within a 10-mile radius of the DHSP site, to the northwest, northeast, and south of the proposed solar facility site. The nearest inactive nest was about 5 miles to the northeast. Additionally, one active but non-reproductive nest was reported in the Coxcomb Mountains, about 5 miles northeast of the site (BLM 2011b). Updated BLM records (L.F. LaPre 2012, personal communication) indicate a total of 10 nests within a 10-mile radius of the DHSP solar facility site. There was early breeding season activity at one of these nests in 2012 but there was no reproduction and no golden activity there by late May, 2012. In order to minimize likelihood of future disturbance or harassment to the sites, the specific nest locations are not provided here. In addition, an adult golden eagle was observed soaring over the eastern portion of the 10-mile radius survey area in January 2012 (Bloom Biological 2012; see Appendix C.7).

Golden eagle foraging habitat consists of open terrain such as grasslands, deserts, savanna, and early successional forest and shrubland habitats, throughout the regional foothills, mountains, and deserts. They prey primarily on lagomorphs and rodents but will also take other mammals, birds, reptiles, and some carrion.

The solar facility site and the gen-tie alternative alignments are on the Chuckwalla Valley floor, and do not provide suitable golden eagle nesting habitat but do provide suitable foraging habitat. The following discussion is based on known golden eagle seasonal occurrence in the region, and on documented nest sites and nest activity within 10 miles of the site (BLM 2011b). Due to the site's proximity to one recently active nest site and several additional sites that were inactive in 2010 but could be used in future years, locally nesting golden eagles could forage at the proposed solar facility site during breeding season. Non-nesting eagles also could forage there throughout the remainder of the year. In addition to mated pairs using the surrounding nesting territories, foraging birds could include wintering or migratory birds (outside the breeding season) and unmated golden eagles or adult birds whose nests may have failed could forage over the site during the breeding season.

Burrowing Owl (Athene cunicularia)

The burrowing owl is a BLM Sensitive Species and a CDFG Species of Special Concern. As a native bird, it is also protected by the MBTA and the California Fish and Game Code. It is a small, terrestrial owl of open country. During the breeding season, it ranges throughout most of the western U.S. It occurs year round in southern California, but may be more numerous during fall and winter, when migratory individuals from farther north join the regional resident population. Burrowing owls favor flat, open annual or perennial grassland or gentle slopes and sparse shrub or tree cover. They use the burrows of ground squirrels and other rodents for shelter and nesting. Availability of suitable burrows is an important habitat component. Where ground squirrel burrows are not available, the owls may use alternate burrow sites or man-made features (such as drain pipes or debris piles). In the California deserts, burrowing owls generally occur in low numbers in scattered populations, but they can be found in much higher densities near agricultural lands where rodent and insect prey tend to be more abundant. Burrowing owl nesting season, as recognized by the California Burrowing Owl Consortium, is 1 February through 31 August (CBOC 1993) but may vary with latitude and climate (CDFG 2012).

Concurrent with the desert tortoise surveys for the solar facility site and gen-tie alignment Alternative E (conducted during spring 2010 on the larger northwestern parcel, spring 2011 on the small parcel, and spring 2012 on the gen-tie line alignment), biologists examined all potentially suitable burrows for sign of burrowing owls. These field surveys correspond to 100 percent coverage Phase II surveys for burrowing owls, according to the CBOC protocol (CBOC 1993). No burrowing owls or their sign were observed during these spring season surveys or during the winter and breeding season avian point count surveys. However, two incidental burrowing owl observations were recorded during streambed delineation field work on the proposed solar facility site. In one observation, a burrowing owl was briefly seen perching and flying, but was not at a burrow. The other observation was a burrowing owl seen in the mouth of an inactive desert kit fox burrow; no burrowing owl sign (e.g., whitewash, prey remains, or owl pellets) was found on the proposed solar facility site or on gen-tie alignment Alternative E. Based on these field surveys and incidental observations, it was determined that the solar facility project study area provides suitable habitat for burrowing owls during winter or breeding

seasons. Breeding burrowing owls were not present on the site during the desert tortoise surveys, but they could nest in the project study area in future years. During fall and winter, the proposed solar site and the proposed and alternative gen-tie alignments appear to serve as low-density seasonal burrowing owl habitat.

Swainson's Hawk (Buteo swainsoni)

The Swainson's hawk is listed as a threatened species under CESA but has no federal listing status. It is also protected under the MBTA and California Fish and Game Code. It is a migratory raptor that breeds in open plains and prairies in the Great Plains and relatively arid areas of western North America, including the Central Valley and the western Mojave Desert. It winters in South America, primarily in Argentina. During the spring and fall migration seasons, Swainson's hawks are observed regularly in southern California. One Swainson's hawk was observed flying over the proposed solar facility site in April 2011. The project study area may serve as incidental foraging habitat during migratory seasons, but otherwise would not support Swainson's hawks, due to the distance from its breeding range.

Gila Woodpecker (Melanerpes uropygialis)

The Gila woodpecker is listed as endangered under CESA but has no status under the federal ESA. It is identified as a bird species of conservation concern by the USFWS, and is also protected under the federal MBTA and California Fish and Game Code. Its geographic range is generally in southern Arizona and southward into Baja California and western mainland Mexico. It occupies this range year round (i.e., it is not migratory). In California, Gila woodpeckers are known from riparian forests along the Colorado River and from desert wash woodlands and residential neighborhoods in Imperial County. Its primary habitat is Cottonwood-Willow Riparian Woodland, but it also uses other desert woodlands (e.g., palo verdes), as well as upland habitats, especially outside the breeding season. It excavates cavity nests in large riparian trees such as cottonwoods and (in upland habitats) saguaro cacti, and feeds largely on insects, mistletoe berries, and cactus fruits. Desert ironwood is apparently too dense for nest excavation. Where Gila woodpeckers occur in dry desert wash woodlands, they excavate cavity nests in large blue palo verde trees. In suburban habitats, they nest in ornamental trees including athel (*Tamarix aphylla*), eucalyptus, and palms. Availability of suitable nesting trees limits breeding habitat suitability.

The project study area is about 40 miles west of the Gila woodpecker's published geographic range, but unpublished observations have been reported from Corn Spring, about 11 miles south of the solar facility site and about 5 miles south of the southern end of the proposed and alternative gen-tie alignments. There is a native palm grove at Corn Spring, and Gila woodpeckers may nest in the palm trees. Also, a Gila woodpecker was reported on 28 September 2010 at the adjacent DSSF project site (BLM 2011b). It is possible that the Corn Spring and Desert Center areas support a small Gila woodpecker population, or that the two local observations in late 2010 were chance observations of an itinerant individual.

Desert wash woodlands on the solar facility site may provide suitable nesting and foraging habitat for Gila woodpecker. The woodlands on the site are dominated by desert ironwood trees, and most of the blue palo verde trees are too small for cavity nests. However, scattered larger blue palo verde trees are present in low numbers throughout the woodlands, and could serve as suitable nest trees.

A Gila woodpecker was observed in the southeastern part of the project site in December 2010, but was not seen again during the BLM protocol winter season or breeding season avian point counts. In spring 2012 (March through May), all desert dry wash woodland habitat was surveyed to determine presence or absence of breeding Gila woodpeckers, but no further Gila woodpecker observations were recorded (see Appendix C.20). Although no Gila woodpecker observations were made in the project study area during BLM protocol point counts or during focused breeding season surveys, there is at least a low probability that they may nest in desert wash woodland habitat on or near the solar facility site or gen-tie alternatives.

Lucy's Warbler (Oreothlypis luciae = Vermivora luciae)

Lucy's warbler is a federal bird of conservation concern, a BLM Sensitive Species, and a CDFG Species of Special Concern. It is also protected under the MBTA and California Fish and Game Code. Lucy's warbler is a migratory songbird that breeds in desert riparian woodlands and winters on Pacific Coast of mainland Mexico. Its breeding range extends through much of Arizona, and parts of the eastern California deserts. It is a cavity nesting species that generally nests in unoccupied woodpecker holes. Its primary nesting habitat is mesquite thickets, but it also uses native riparian trees and non-native athel. Two (2) singing male Lucy's warblers were reported in April 2011 near the southwestern corner of the solar facility site. These birds were not observed later during the nesting season (28 April survey date), though no focused surveys were conducted. It is unknown whether either or both of these birds successfully established breeding territories in the area, or moved on to another site. Suitable nesting cavities may be available in the small number of large blue palo verde trees on the site, but probably not in the more dominant desert ironwood trees (see Gila woodpecker discussion, above). Lucy's warblers may nest in desert wash woodlands on or near the proposed solar facility site and gen-tie alternatives.

Bendire's Thrasher (Toxostoma bendirei)

Bendire's thrasher is a BLM Sensitive Species and CDFG Species of Special Concern. It is also protected under the MBTA and California Fish and Game Code. California populations are migratory, though it is found year round in more southern portions of its range, in southern Arizona and adjacent Mexico. The proposed solar facility site is near the southern boundary of its breeding range in California. It breeds in open, upland desert shrublands of Joshua Tree National Park (JTNP) and surrounding area, and northward through several disjunct regions of the Mojave Desert. Its habitat requirements are poorly understood, but it is generally associated with plants in the genera *Yucca* (e.g., Joshua tree) and *Opuntia* (cholla cacti) on gently sloping terrain. Soil texture is apparently important to habitat suitability, perhaps because Bendire's thrashers largely forage on ground-dwelling insects (BLM 2005). Hard rocky soils (e.g., desert pavement) and loose sands (e.g., dry wash sands) are apparently less suitable than firmly packed, fine-textured soils. Bendire's thrashers were not observed on the proposed solar facility site during the winter or breeding-season point count surveys, but records of this species from the CNDDB exist 6.5 miles to the south. Habitat throughout the site appears to be of marginal suitability, due to relatively low cover of *Yucca* and *Opuntia* species, and seemingly poorly suitable soil texture. There is a low to moderate probability that Bendire's thrasher may occur on the site or along the gen-tie alternatives.

Other Special-Status Raptors

In addition to raptors discussed above, several other special-status birds of prey are found seasonally, especially during winter, in the region. These include osprey, ferruginous hawk, Cooper's hawk, sharp-shinned hawk, northern harrier, prairie falcon, merlin, short-eared owl, and long-eared owl. With the exception of osprey and sharp-shinned hawk, none of these species was observed in the project study area during surveys. Osprey and sharp-shinned hawk were observed flying over the solar facility during winter season point count surveys, but neither species is expected to nest in the area because the project study area is outside of the breeding range and there is no nesting habitat present on or near the proposed solar facility site. Outside their breeding seasons, these raptors need not return to their nests to feed young or tend eggs. Thus, they are able to forage over wide areas, where they capture birds, reptiles, or small mammals. Suitable winter or migratory season foraging habitat for all of these raptors is widely available at the project site and throughout the region.

Upland Perching Birds

Several special-status upland perching bird species are present or have the potential to occur in the project study area. These include loggerhead shrike, Le Conte's thrasher, Vaux's swift, black-tailed gnatcatcher, and vermillion flycatcher. Of these, Vaux's swift, black-tailed gnatcatcher, and loggerhead shrike were recorded in the project study area during surveys. A Vaux's swift was observed over the site during migration season. This species occurs in the area only during migration; it nests well to the north. Loggerhead shrikes were observed on the solar facility site routinely throughout the winter and breeding season avian point count surveys and on gen-tie alignment Alternative E during spring 2012. Black-tailed gnatcatcher was observed on gen-tie alignment Alternative E during April 2012. Le Conte's thrasher has not been reported on site, but habitat is suitable and there are records for this species 6.5 miles south of the proposed solar facility site near the gen-tie alternatives. Vermillion flycatchers have not been reported on site, but nest in similar habitat to the south and could nest in Blue Palo Verde–Ironwood Woodlands (Desert Dry Wash Woodland) in the project study area in future years. The Eagle Mountains scrub jay population resides year round in pinyon woodlands in the Eagle Mountains to the west and northwest of the proposed solar facility site. It is disjunct from other scrub jay populations, and is on CDFG's "watch list" but has no other special conservation status. A scrub jay was observed on the project site in October 2011; presumably, it was wandering or dispersing from habitat in the Eagle Mountains. However, no suitable scrub jay habitat is found in the project study area.

Mammals

Special-Status Bats

A number of bat species that are designated as Sensitive by the BLM and/or Species of Special Concern by CDFG have a high potential to occur on site. These include pallid bat, Townsend's big-eared bat, California mastiff bat, western yellow bat, California leaf-nosed bat, big free-tailed bat, and pocketed free-tailed bat (Table 3.4-2).

The special-status bats of the local area roost in rock crevices, tunnels, or caves; one species (western yellow bat) roosts in the foliage of riparian trees. California leaf-nosed bat has been recorded roosting at various mines in the Eagle Mountains to the northwest (CNDDB 2011), and

several other common and special-status bats likely roost there as well. Roost sites may be used seasonally (e.g., inactive cool seasons) or daily (day roosts, used during inactive daylight hours). Maternity roosts are particularly important overall for bat life histories.

Knowledge of bat distribution and occurrences is sparse. The majority of adverse impacts to bat populations in the region result from disturbance of roosting or hibernation sites, especially where large numbers of bats congregate; physical closures of old mine shafts, which eliminates roosting habitat; elimination of riparian or desert wash microphyll vegetation which is often productive foraging habitat; more general habitat loss or land use conversion; and agricultural pesticide use which may poison bats or eliminate their prey-base. Bat life histories vary widely. Some species hibernate during winter, or migrate south. During the breeding season, bats generally roost during the day, either alone or in communal roost sites, depending on species. All special-status bats in the region are insectivorous, catching their prey either on the wing or on the ground. Some species feed mainly over open water where insect production is especially high, but others forage over open shrublands such as found on the solar facility site and along the gen-tie alternative alignments.

While the project site supports foraging habitat for bats, large roosting colonies are not likely to occur because the site does not support typical roosting habitat for most bats, especially colonial species.

Palm Springs Round-Tailed Ground Squirrel (Xerospermophilus tereticaudus chlorus)

Palm Springs round-tailed ground squirrel (also called Coachella Valley round-tailed ground squirrel) is a CDFG Species of Special Concern and a BLM Sensitive Species, and was a candidate for federal listing as threatened or endangered prior to 2010, when it was removed from the list of candidates (USFWS 2010b). Until recently, it was believed to be limited in range to the Coachella Valley region. Within that area, its primary habitat is mesquite (*Prosopis glandulosa*) hummocks and associated sand dunes and, to a lesser extent, dunes and hummocks associated with creosote bush or other vegetation. The primary threats to its habitat are land use changes and groundwater pumping, both of which have eliminated much of the honey mesquite from the Coachella Valley area. Recent research indicates that its range is substantially larger than previously understood, extending at least 150 miles northward to Hinkley Valley and Death Valley. Based on this range extension, the existing protection on its habitat in Death Valley National Park, and ongoing conservation efforts in the Coachella Valley, the USFWS concludes that it no longer warrants candidate status.

Palm Springs round-tailed ground squirrel was reported near gen-tie Alternatives B and C in the DSSF EIS and CDCA Plan Amendment (BLM 2011b), and a round-tailed ground squirrel (subspecies unknown) was observed on the proposed solar generation facility site during desert tortoises surveys. Habitat on the proposed solar facility site and gen-tie Alternatives B, C, and D is marginally suitable, but lacks the aeolian sands and mesquite hummocks that characterize the squirrel's primary habitat. Gen-tie Alternative E crosses suitable habitat over a portion of its length but was not observed on the alignment during field surveys in spring 2012. Based on the foregoing, Palm Springs round-tailed ground squirrel may occur in low numbers on the solar facility site or gen-tie alternatives, but primary habitat would only be intersected by Alternative E over the portion of its length crossing aeolian sands.

American Badger (Taxidea taxus)

American badger is designated as a Species of Special Concern by CDFG. It is a now uncommon, permanent resident throughout most of the state, including the Colorado Desert. Badger numbers have declined drastically in California in the 20th century due largely to agricultural and urban development, direct and secondary poisoning, and shooting and trapping for control (Bolster 1998), though these factors probably have not been important threats to badgers in the Colorado Desert. They are found in open shrubland, forest, and herbaceous habitats with friable soils. In the southwest, badgers are typically associated with creosote bush and sagebrush shrublands. Badgers are fossorial, digging large burrows in dry, friable soils and will use multiple dens/cover burrows within their home range, which they move among daily, although they can use a den for a few days at a time (Western et al. 2010). Badger home range sizes are dependent upon prey availability and other habitat characteristics. In general, home ranges are several hundred acres in size, though they would likely be larger in the Colorado Desert due to low prey densities. American badger dens were recorded on the proposed solar facility site during surveys, and suitable desert scrub habitat is present throughout the project study area, including the gen-tie alternative alignments.

Desert Kit Fox (Vulpes macrotis arsipus)

The desert kit fox can be found in much of the same habitats as the badger. Desert kit fox is not listed as a special-status species by the State of California or the USFWS, but it is protected under Title 14, Section 460, California Code of Regulations, which prohibits take. This summary of kit fox biology is based on Cypher (2003). Kit foxes are primarily nocturnal, and inhabit open level areas with patchy shrubs. Friable soils are necessary for the construction of dens, which are used throughout the year for cover, thermoregulation, water conservation, and rearing pups. Their home ranges vary but average about 1,100 ha (2,700 acres) in California deserts. They are not strongly territorial and home ranges can overlap. Desert kit fox pairs and young may use one or several active den complexes. Pairs raise one litter of about four pups per year, born between late January and March. The pups emerge from the natal den four weeks after birth and begin to forage with the parents at age three to four months. In early 2012, an outbreak of canine distemper virus was discovered in desert kit fox populations in eastern Riverside County, including the immediate vicinity of the proposed DHSP site (M. Massar and M. Rodriguez, pers. comm. with Scott D. White, March 2012). The CDFG is currently assessing the extent of the outbreak and developing strategies for desert kit fox management to address the distemper outbreak and the habitat impacts of renewable energy projects. Numerous desert kit fox burrows were recorded in the proposed solar facility site and on gen-tie alignment Alternative E, and suitable habitat occurs throughout the project study area, including all the gen-tie alternative alignments.

Burro Deer (Odocoileus hemionus eremicus)

The burro deer (also known as the desert mule deer) is a subspecies of mule deer endemic to southeastern California, through southern Arizona and New Mexico, and desert regions of mainland Mexico. Burro deer eat foliage from various riparian and microphyll woodland trees, such as willow, palo verde, and ironwood. Various other shrubs complete the diet depending on the season (BLM and CDFG 2002).

Burro deer tend to have larger home ranges than mule deer in other areas, probably because their desert habitat produces less food. Their home ranges contract during summer, likely because the deer must remain fairly near dependable water sources. Their habitats include desert mountain ranges, bajadas, and flats. The mountainous areas provide favored fawning habitat and more reliable water sources (springs and bedrock sinks) than the flats (Western et al. 2010). Further, montane vegetation provides greater nutritional value than creosote scrub on the flats and bajadas. Dense vegetation is an important habitat element year round for shaded cover and protection from predators (Western et al. 2010).

Burro deer require drinking water and generally drink daily during summer. Thus their summer range is largely limited to areas within a few kilometers of water sources. The proposed solar facility site is on a bajada where burro deer may range during cool seasons, but it provides no onsite water supply, nor is it near enough to a surface water source for regular warm-season foraging. Vegetation on the site is generally open, and no suitable dense thickets for shaded escape cover are available. Thus, the solar facility site is unlikely to serve as important burro deer habitat. However, burro deer are likely to use habitat on the site intermittently during winter, especially as a movement corridor among regional mountain ranges. Tracks of an unidentified ungulate (burro deer or Nelson's bighorn sheep) were noted on the proposed solar facility site during field surveys.

Yuma Mountain Lion (Felis concolor browni)

The Yuma mountain lion is recognized by CDFG as a Species of Special Concern (CDFG 2011). Interpretations of its geographic range vary, but by any account it is limited to the Sonoran Desert in southern California and perhaps east into Arizona and south into Mexico (Bolster 1998). The Yuma mountain lion's life history is poorly documented. It is known largely from the bottomlands and foothills of the Colorado River Valley. Its principal prey is burro deer and bighorn sheep, and its range and habitat generally coincide with theirs (Bolster 1998).

There is some concern that the Colorado Desert region may not support a viable mountain lion population, and that lions found in the eastern low desert have dispersed there from surrounding areas. Habitat loss is a serious concern for Yuma mountain lion, for two reasons. First, declining habitat availability and increasing habitat fragmentation affect its long-term population viability. Second, as habitat loss and fragmentation affect burro deer and bighorn sheep, any reduction of the available prey could lead to an insufficient prey base for a viable mountain lion population (Bolster 1998).

The proposed solar facility site is unlikely to serve as important Yuma mountain lion habitat given that it does not provide viable habitat for burro deer or bighorn sheep. However, mountain lions may use habitat on the site intermittently during winter, especially as a movement corridor among regional mountain ranges.

Nelson's Bighorn Sheep (Ovis canadensis nelsoni)

Nelson's bighorn sheep is known from the Transverse Ranges, California Desert Ranges, Nevada, northern Arizona, and Utah. Its populations in the Peninsular Ranges (the Santa Rosa and San Jacinto Mountains, and southward into Baja California) are federally listed as a threatened distinct vertebrate population segment. However, populations in eastern Riverside County have no CESA or ESA listing status. It is a BLM Sensitive Species and, except where designated

otherwise by CDFG, is fully protected under the state Fish and Game Code. Threats to Nelson's bighorn sheep include habitat loss or degradation, limited availability of water sources, barriers to local or regional movement (e.g., highways and aqueducts), disease spread by domestic livestock, and natural predation by mountain lions in some populations. Current and/or historic populations occur in the mountain ranges in the general region surrounding the proposed solar facility site and gen-tie alternative alignments, including the Eagle, Coxcomb, Chuckwalla, Granite, and Northern Palen Mountains (CNDDB 2011). Nelson's bighorn sheep are likely to use habitat on the site intermittently during winter, especially as a movement corridor among regional mountain ranges. As noted above, tracks of an unidentified ungulate (burro deer or Nelson's bighorn sheep) were observed on the proposed solar facility site during field surveys.

3.4.6 Wildlife Movement

The extent, distribution, and accessibility of suitable habitat affect the long-term viability of regional wildlife populations. Fragmentation and isolation of natural habitat ultimately results in the loss of vulnerable native species within those areas. Accessibility between habitat areas, i.e., "connectivity," is important to long-term genetic diversity and demography of wildlife populations. In the short term, connectivity may also be important to individual animals' ability to occupy their home ranges, if their ranges extend across a potential movement barrier. These considerations apply to greater or lesser extent to all plants and animals. Plant populations "move" over the course of generations via pollen and seed dispersal; most birds and insects travel and disperse via flight; terrestrial species including small mammals, reptiles, arid land amphibians, and non-flying invertebrates disperse across land. Therefore, landscape barriers and impediments are more important considerations for movement of these terrestrial species. These considerations are especially important for rare, threatened, or endangered species such as the desert tortoise and large mammals, which tend to be wide-ranging and exist in lower population densities. Therefore, this discussion of wildlife movement in the project study area focuses on desert tortoise and Nelson's bighorn sheep, though it is also applicable to a wide variety of other species.

The potential for movement constraints is also relevant for other species, including corridor "passage" and corridor "dweller" species (Beier and Loe 1992). Corridor passage species would traverse connectivity areas during ordinary diurnal or seasonal movement patterns, whereas corridor dweller species must persist as viable populations over multiple generations within a connectivity area in order to eventually migrate from one habitat block to another. For example, Pinto Wash, which the Colorado River Aqueduct crosses north of the project site, and links to upper bajada habitat at the base of the Eagle Mountains west of the site, appears to be an important linkage between desert tortoise populations in the Colorado and Mojave Deserts (USFWS 2011b). Pinto Wash also spreads into a braided channel system on the upper bajada east of the site, at the bases of the Coxcomb Mountains, though there is relatively little quality desert tortoise habitat to the east and southeast (Nussear et al. 2009).

In landscapes where native habitats exist as partially isolated patches surrounded by other land uses, planning for wildlife movement generally focuses on "wildlife corridors" to provide animals with access routes among habitat patches. In largely undeveloped areas, including the Chuckwalla Valley, wildlife habitat is available in extensive open space areas throughout much of the region, but specific barriers may impede or prevent movement. In these landscapes, wildlife movement planning focuses on specific sites where animals can cross linear barriers (e.g.,

wash crossings beneath Interstate 10), and on broader linkage areas that may support stable, long-term populations of target species.

In the Chuckwalla Valley, the biologically important functions of large mammal movement are the long-term demographic and genetic effects of occasional animal movement among mountain ranges and other large habitat areas. Animals such as Nelson's bighorn sheep may travel across the valley infrequently, as a part of dispersal among subpopulations. Animals may also use bajada habitat, including habitat on the proposed solar facility site, for seasonal foraging, as part of their regular home ranges. These large animals are examples of corridor "passage" species. In contrast to large animal movement, desert tortoises and other less-mobile animals may live out their entire lives within a linkage area between larger habitat blocks; for these species, movement among mountain ranges may take place over the course of several generations (Beier and Loe 1992). The USFWS (2011b) recommends maintaining large areas of occupied desert tortoise habitat in important linkage areas, including the upper Chuckwalla Valley. Within these linkage areas, desert tortoises should be "dweller" species.

A state-wide evaluation of habitat connectivity (Spencer et al. 2010) includes the upper Chuckwalla Valley, including the DHSP site, among areas identified as "Essential Connectivity Areas." The report describes these as follows: "Essential Connectivity Areas are placeholder polygons that can inform land-planning efforts, but that should eventually be replaced by more detailed Linkage Designs, developed at finer resolution based on the needs of particular species and ecological processes" (p. xiii). In Chapters 4 and 5, Spencer et al. (2010) provide "frameworks" for regional and local scale connectivity analysis. Following these recommendations, BLM contracted researchers involved in the state-wide evaluation to conduct regional and local analyses across the desert, including this area. Preliminary results indicate that the critical connectivity area lies to the west of the proposed solar facility and gen-tie alternatives (Fesnock pers com).

BLM management strategies for wildlife and habitat, including management to maintain connectivity among habitat areas, include special management of ACECs, Wilderness Areas, Wilderness Study Areas, WHMAs and DWMAs. Certain BLM lands within the Chuckwalla Valley and near the project area are designated as ACECs, WHMAs, and DWMAs (Figure 3.4-1 in Appendix A). Extensive natural habitat areas within JTNP, north of the project site, are also important to regional wildlife habitat connectivity.

The Chuckwalla Valley is bordered on the south by the Chuckwalla Mountains, south of the I-10; and on the north by the Eagle Mountains and Coxcomb Mountains, both within JTNP, north of the Colorado River Aqueduct (Figure 3.4-3 in Appendix A). Opportunity for wildlife movement among these mountain ranges is significantly impeded by Interstate 10 and the aqueduct. A few other existing linear features (paved roads, the disused Kaiser rail line, unpaved roads, transmission line and pipeline access roads parallel to the freeway) have only minimal effects on wildlife movement. Non-linear impediments to wildlife movement include residential land uses around Lake Tamarisk and Eagle Mountain; the closed Eagle Mountain quarry and associated overburden deposits, evaporation ponds, and other facilities; and the active and disused agricultural lands throughout the valley. In addition, the first phase (Phase 1A) of construction of the DSSF project is currently fenced and serves as a barrier to wildlife movement. The fenced portion includes an area of approximately 500 acres extending east from Kaiser Road 0.7 miles along the northern boundary of the proposed solar facility site. Even with these impediments to biological connectivity, there is opportunity for both corridor "passage" and "dweller" wildlife species to

move through the area, via washes and culverts beneath the I-10 Freeway, siphon sites along the aqueduct, and remaining open space areas. Movement opportunity varies for each species, depending on motility and behavioral constraints, as well as landscape impediments.

Some species, such as coyote, may learn to cross the freeway safely. But for most terrestrial species the freeway presents an impassable or high-risk barrier to north-south movement. There are potential wildlife crossings beneath the freeway at scattered wash crossings (e.g., box culverts) and at the underpasses at Desert Center Road and Eagle Mountain Road. In some cases, these crossings are accessible to most terrestrial wildlife species. In other cases, soil on the downstream sides has eroded away, leaving vertical steps of about 2 feet, which would not be accessible to desert tortoises or many other reptiles and small mammals. Also, while the crossings are large enough for physical access to any species, specific behavioral adaptations affect the likelihood that any given species would use them. Mountain lions or coyotes would likely cross through the culverts routinely, but deer and bighorn sheep may avoid culverts if they appear to present predation risk.

The portions of the aqueduct where water flows in an uncovered surface canal present an impassable barrier, except at periodic "siphon" points, where desert washes cross over the aqueduct. At these crossings, aqueduct water is carried underground through U-shaped siphons over distances of several hundred feet or more. Figure 3.4-3 in Appendix A indicates the locations of potential wildlife crossings along the freeway and aqueduct. Burro deer have been documented crossing similar aqueduct siphons in Arizona (Tull and Krausman 2001).

The proposed solar facility site is located roughly midway between the three mountain ranges that surround the upper Chuckwalla Valley. It is adjacent to a small (approximately 40-acre) date palm orchard near its southeastern corner; about 1 mile north of agricultural lands on about 1,000 acres; and about 0.25 miles west of another large agricultural tract, also covering about 1,000 acres. These agricultural lands would likely be passable to "corridor passage" species, such as large mammals. Disused agricultural lands may also be suitable for some "dweller" species, including small mammals and reptiles, but they are generally poorly suited for desert tortoises. Due to the poor quality of habitat on the proposed solar facility site, the fragmented and disturbed landscape surrounding the site, and the low tortoise sign observed on the site, this area would not be considered suitable for tortoise "dwelling" in high enough densities to support generational connectivity among tortoises, and therefore would be of minimal value to support regional connectivity.

3.5 CLIMATE CHANGE

This section describes the environmental and regulatory settings associated with the construction and operation of the Proposed Action and its alternatives with respect to climate change in the project study area. The project study area for climate change includes the natural and anthropogenic drivers of global climate change and the increasing world-wide greenhouse gas (GHG) emissions from human activities during the industrial era.

Climate is the generalization of weather conditions for a region throughout the year and averaged over a series of years. Climate descriptions typically emphasize average, maximum, and minimum conditions for temperature and precipitation patterns, but also include wind, cloud cover, humidity, and sunlight intensity patterns.

Changes in climate conditions occur over a wide range of time scales. Climate change over time scales of tens of thousands to hundreds of thousands of years or longer are produced by natural factors such as:

- Continental drift and associated changes in ocean circulation patterns, with resulting changes to atmospheric circulation patterns and weather conditions;
- Continental uplift and tectonic activity forming mountain ranges and plateaus that alter atmospheric circulation patterns and weather conditions over land areas; and
- Variations in the shape of Earth's orbit around the sun and variations in the tilt of the Earth's axis, affecting the intensity of sunlight received at different locations.

Climate change over shorter time scales is produced by natural factors such as:

- Variations in the sun's output of solar radiation;
- Volcanic eruptions releasing large quantities of carbon dioxide (CO_2), sulfur compounds, and aerosols;
- Periodic changes in ocean circulation patterns and sea surface temperatures, which influence global weather patterns;
- Changes in the extent of snow and ice cover; and
- Other changes in land surface properties affecting the absorption and reflection of solar radiation.

Increases in the atmospheric concentrations of CO_2, methane (CH_4), nitrous oxide (N_2O), and other GHGs over the last 250 years are due largely to human activities, such as:

- Fossil fuel use;
- The effects of land use change on plant and soil carbon;
- Ruminant animals, agriculture, and biomass burning;
- Use of atmospheric halocarbons and industrial fluorinated gases;
- Generating solid and liquid aerosol air pollutants; and
- Changes in land surface properties affecting the absorption and reflection of solar radiation.

Greenhouse Gases

Greenhouse gases are compounds in the atmosphere that absorb infrared radiation and re-radiate a portion of that back toward the earth's surface, thus trapping heat and warming the earth's atmosphere. The most important GHG pollutants are CO_2, methane (CH_4), and nitrous oxide (N_2O), because these GHG emissions are the most common and dominate the global warming potential of anthropogenic emissions. These are produced naturally by respiration and other physiological processes of plants, animals, and microorganisms; by decomposition of organic matter; by volcanic and geothermal activity; by naturally occurring wildfires; and by natural chemical reactions in soil and water. Other GHG pollutants are not as long-lived. For example, ozone is chemically very reactive, and high concentrations do not persist for long periods of time in the lower atmosphere, reducing the overall climate effects this pollutant in the lower atmosphere.

Although naturally present in the atmosphere, concentrations of CO_2, CH_4, and N_2O also are affected by emissions from industrial processes, transportation technology, urban development, agricultural practices, and other human activity. The Intergovernmental Panel on Climate Change (IPCC) and the National Oceanic and Atmospheric Administration (NOAA) estimate the following changes in global atmospheric concentrations of the most important GHGs (IPCC 2001, 2007; NOAA 2010):

- Atmospheric concentrations of CO_2 have risen from a pre-industrial background of 280 parts per million by volume (ppm) to 379 ppm in 2005 and to 386 ppm in 2009;
- Atmospheric concentrations of CH_4 have risen from a pre-industrial background of about 0.70 ppm to 1.774 ppm in 2005 and to 1.79 ppm in 2009; and
- Atmospheric concentrations of N_2O have risen from a pre-industrial background of 0.270 ppm to 0.319 ppm in 2005 and to 0.322 ppm in 2009.

The IPCC has concluded that these changes in atmospheric composition are almost entirely the result of human activity, not the result of changes in natural processes that produce or remove these gases (IPCC 2007).

CO_2, CH_4, and N_2O have atmospheric residence times ranging from about a decade to more than a century. Several other important GHG compounds with long atmospheric residence times are produced almost entirely by industrial processes; these include sulfur hexafluoride (SF_6) and a wide range of fluorinated hydrocarbons. These fluorinated compounds typically have atmospheric residence times ranging from a few decades to thousands of years.

The overall global warming potential of GHG emissions is typically presented in terms of carbon dioxide equivalents (CO2e), using equivalency factors developed by the IPCC. The IPCC has published sets of CO2e factors as part of its periodic climate change assessment reports issued in 1995, 2001, and 2007. The latest IPCC data assign global warming potential multipliers of 1 to CO_2, 21 to CH_4, and 310 to N_2O (IPCC 2007). The global warming potential multiplier for sulfur hexafluoride (SF_6) is 23,900; global warming potential multipliers for fluorinated hydrocarbons vary widely according to the specific compound.

CARB estimated that the 1990 level of GHG emissions in California was 427 million metric tons CO2e (MMTCO2e) (CARB 2007). Updated inventories show the 1990 level to be 433 MMTCO2e, and the 2008 level of GHG emissions for California was 477.74 MMTCO2e

(CARB 2010a), a 11.9 percent increase over 1990 levels. As a comparison, USEPA estimates that national GHG emissions in 2008 were 7.783 billion metric tons CO2e (USEPA 2010). California thus accounted for 6.1 percent of overall U.S. GHG emissions in 2008. National GHG emissions in 2006 represented a 14.2 percent increase from estimated 1990 national GHG emissions (6.814 billion metric tons CO2e). CARB estimates that without implementation of programs to reduce GHG emissions, statewide GHG emissions in 2020 would be about 596 MMTCO2e, a 39.6 percent increase from 1990 levels (CARB 2008).

Based on the GHG inventory for 2008 (CARB 2010a), the major sources of GHG emissions in California are:

- Fuel combustion for motor vehicle, aircraft, rail, and commercial vessel transportation (36.63%);
- Industrial facility operations and fuel use (19.40%);
- Fuel combustion for electricity generation, both in-state and imported (24.35%);
- Fuel use in commercial and residential buildings (9.03%);
- Recycling and waste management (1.40%);
- High Global Warming Potential (3.28%);
- Agricultural (5.87%); and
- Forestry – wildfire (0.04%).

3.5.1 Regulatory Framework

State and Federal Climate Change Programs

The U.S. Department of the Interior (DOI) has established general policies related to renewable energy development and climate change. In 2001, Secretary Order 3226 established a requirement that each bureau or office within the DOI should consider and analyze potential climate change impacts when undertaking long-range planning, developing multiyear management plans, making major decisions on using resources under the DOI's purview, or setting priorities for scientific research and investigation. In March 2009, Secretary Order 3285 set a policy that encouraging the production, development, and delivery of renewable energy would be one of the DOI's highest priorities. In September 2009, Secretary Order 3289 reaffirmed the provisions of Secretary Order 3226 and established a DOI Carbon Storage Project to develop methods for geological and biological carbon storage. In February 2010, Secretary Order 3289 was replaced with Secretary Order 3289, Amendment 1, which made minor editorial changes to the original order.

The EPA adopted a federal GHG mandatory reporting program in October 2009. The federal GHG mandatory reporting threshold is 25,000 metric tons per year CO2e for 31 categories of stationary emission sources (USEPA 2009). GHG reporting for additional categories of stationary sources may be addressed by future regulations. Electrical power transmission and distribution system is one of the source categories, which remains under review for future federal GHG reporting requirements. Electrical transformers, switchgear, circuit breakers, gas-insulated substations, and gas-insulated transmission lines are a source of sulfur hexafluoride and fluorinated hydrocarbon emissions (mostly from equipment and storage container leaks or from spills and leaks during recharging of insulating gases).

In addition, Executive Order (EO) 13514, "Federal Leadership in Environmental, Energy, and Economic Performance" (Oct. 5, 2009), directs all Federal agencies to inventory, report, and reduce their direct and indirect greenhouse gas (GHG) emissions in three categories: "scope 1" direct emissions from sources owned or controlled by the agencies; "scope 2" indirect emissions that result from the generation of electricity, heat, or steam that the agencies purchase; and "scope 3" indirect emissions from sources that are not owned or directly controlled by the agencies but that relate to their activities (e.g., employee commuting). Starting with a fiscal year (FY) 2008 baseline and a FY 2010 inventory due in 2011, agencies must submit their annual GHG emissions inventories and reports to the Council on Environmental Quality (CEQ) and the Office of Management and Budget (OMB) every January, for the preceding fiscal year. Under current guidance, agencies generally need not report GHG emissions associated with activities they authorize, but those emissions may be voluntarily reported.

California began efforts to address GHG issues at a state level in 1988 when the California Energy Commission (CEC) was directed to develop a statewide inventory of GHG emission sources. The California Climate Action Registry was established in 2000 to allow companies and government agencies to voluntarily record their GHG emissions in a database, in anticipation of possible future regulations that might allow credit for early GHG emission reductions. In 2002, Assembly Bill (AB) 1493 directed CARB to develop regulations to reduce GHG emissions from vehicles sold in California. In 2005, Governor Schwarzenegger issued Executive Order S-3-05, which sets the following target dates for reducing statewide GHG emissions:

- Reduce GHG emissions to 2000 levels by 2010;
- Reduce GHG emissions to 1990 levels by 2020; and
- Reduce GHG emissions to 80 percent below 1990 levels by 2050.

In 2006, Senate Bill (SB) 1368 created GHG performance standards for new long-term financial investments in base-load electricity generation facilities serving California customers. Also in 2006, California passed AB 32 (the California Global Warming Solutions Act of 2006; California Health and Safety Code Division 25.5, Sections 38500, et seq.), which requires CARB to design and implement regulations, emission limits, and other measures to reduce statewide GHG emissions to 1990 levels by 2020.

The California Global Warming Solutions Act of 2006 (AB 32) established the following timetable for specific CARB actions:

- Publish a list of discrete early action GHG emission reduction measures by June 30, 2007.
- Establish a statewide GHG emissions cap for 2020 (equivalent to the 1990 emissions level) by January 1, 2008.
- Adopt mandatory reporting rules for significant sources of GHGs by January 1, 2008.
- Adopt a scoping plan by January 1, 2009, indicating how GHG emission reductions will be achieved from significant GHG sources via regulations, market-based compliance mechanisms and other actions, including identification of a *de minimis* threshold for GHG emissions, below which emission reduction requirements would not apply.

- Adopt regulations by January 1, 2011 to achieve the maximum technologically feasible and cost-effective reductions in GHGs, including provisions for using both market-based and alternative compliance mechanisms.
- Establish January 1, 2012 as the date by which all regulations adopted prior to January 1, 2010 are to become operative (enforceable).
- The goals of the California Global Warming Solutions Act of 2006 are to halt the growth in annual GHG emissions and to reduce GHG emissions to the 1990 level by 2020. Achieving the 2020 goal would represent a 12 percent reduction in statewide GHG emissions from 2006 levels and a 28 percent reduction from projected 2020 "business as usual" emission levels.

In 2007, CARB adopted regulations requiring mandatory annual reporting of GHG emissions from the following categories of industrial emission sources:

- Cement manufacturing plants;
- Electric generating plants, retail providers, and power marketers;
- Cogeneration facilities;
- Petroleum refineries, hydrogen plants, and combustion from oil and gas production; and
- General stationary source fuel combustion.

The GHG reporting requirements (CARB 2010b) establish a reporting threshold of 25,000 metric tons per year of CO_2 emissions for industrial facilities other than power generation and cogeneration facilities. The emission reporting threshold for power generation and cogeneration facilities is 2,500 metric tons per year of CO_2. Power generation and cogeneration facilities with a capacity of less than 1 megawatt, backup and emergency generators, portable equipment, primary and secondary schools, and most hospitals are exempt from the reporting requirements. While the CARB mandatory GHG reporting regulation requires the reporting of all major GHG emissions, the thresholds for requiring the reports are based on CO_2 emissions only, not total CO2e from all GHG emissions. GHG emissions from vehicle fleets also are excluded from the mandatory reporting requirements, but the regulation provides for voluntary reporting of those emissions. Non-exempt facilities with annual CO_2 emissions below the relevant *de minimis* thresholds are not required to report their annual GHG emissions. All facilities subject to the regulation must submit annual GHG emission reports. In addition, depending on type and size of facility, independent verification of annual GHG emission reports must be submitted either annually or every third year.

CARB adopted the climate change scoping plan mandated by AB 32 in December 2008 (CARB 2008). Key elements of the plan include:

- Expanding and strengthening energy efficiency programs, building energy efficiency standards, and appliance energy efficiency standards;
- Achieving a renewables energy mix of 33 percent for statewide electrical power generation;
- Developing a California cap-and-trade program coordinated with other western states to limit industrial GHG emissions;
- Establishing targets for transportation-related GHG emissions by region throughout California and pursuing policies and incentives to achieve those targets;

- Adopting and implementing measures such as California's clean car standards, the low carbon fuel standards, and goods movement measures; and
- Creating targeted fees such as a public goods charge on water use, fees on the use of high global warming potential gases, and a fee to fund the administrative costs of implementing AB 32 programs.

In 2008, SB 375 was adopted to provide a process for regional and local planning efforts to achieve GHG emission reductions through land use and transportation planning programs. SB 375 requires coordination between the regional transportation planning process and the regional housing needs assessment process. SB 375 also modifies the regional housing needs assessment process timelines to be consistent with timelines for regional transportation planning. Under SB 375, CARB will establish transportation-related regional GHG emission reduction targets to be considered in regional transportation planning programs. The regional GHG emission reduction targets are planning goals, not mandatory requirements. Regional planning organizations will be responsible for working with local governments to identify a "sustainable communities strategy" that is based on current planning assumptions, is consistent with federal Clean Air Act requirements, and will help achieve regional GHG emission reduction targets.

Greenhouse Gas Reduction Strategies

Combustion of fossil fuels accounts for most GHG emissions, both in California and nationally. Additional GHG emissions are produced directly by industrial, agricultural, and waste management activities. The importance of fossil fuel combustion as a source of GHG emissions means that energy conservation and fuel economy measures have a major role in reducing GHG emissions. Most potential GHG reduction measures can be grouped into the following general categories:

- GHG emission standards for mobile sources;
- Improved fuel economy for mobile sources;
- Increased use of non-combustion sources for electrical power generation;
- Reduced electrical use in residential, commercial, and industrial buildings;
- Reduced fossil fuel use in residential, commercial, and industrial buildings;
- Land use and transportation programs to reduce vehicle trips and vehicle miles traveled (VMT);
- GHG emission reductions from stationary fuel combustion sources;
- GHG emission reductions from non-combustion sources in industrial operations;
- Development of substitutes for industrial uses of sulfur hexafluoride and fluorinated hydrocarbons;
- Reduced use of nitrogen fertilizers in agriculture and landscape maintenance;
- Improved CH_4 recovery at landfills and wastewater treatment plants; and
- CH_4 recovery at feedlots, dairies, and other livestock operations.

As noted previously, electrical power generation represents an important source of GHG emissions (22 percent of California's GHG emissions). The CEC and the CPUC have implemented two programs focused specifically on generators and retailers of electrical power.

In 2002, SB 1078 established targets for renewable energy use by public and investor-owned utilities in California. The following types of power sources qualify as renewable energy sources under the Renewables Portfolio Standards (RPS) Program:

- Geothermal;
- Wind;
- Solar thermal;
- Photovoltaic solar;
- Small hydroelectric (under 30 megawatts);
- Efficiency improvements for large hydroelectric;
- Conduit hydroelectric;
- Ocean wave;
- Tidal currents;
- Ocean thermal;
- Biomass;
- Digester gas;
- Landfill gas;
- Municipal solid waste; and
- Biodiesel.

The California RPS Program sets fixed performance standards for investor-owned utilities in California and allows publicly owned utilities to set their own standards and target deadlines. The initial RPS target for investor-owned utilities was 20 percent renewable power generation by 2017. In 2006, SB 107 revised the target date for the 20 percent standard to 2010. As noted previously, the CARB climate change scoping plan adopted in 2008 calls for a statewide renewable energy mix of 33 percent by 2020.

In April 2011, Senate Bill 2 of the 1st Extraordinary Session (SB X1-2), also known as the California Renewable Energy Resources Act**,** was signed into law. This law applies the new 33 percent RPS by December 31, 2020 to all retail sellers of electricity. It also established standards for interim years of: an average of 20 percent from 2011 through 2013, a minimum of 20 percent thereafter through 2016, and a minimum of 25 percent by December 31, 2016. This codified the requirement to achieve 33 percent RPS statewide by the end of 2020.

In 2006, SB 1368 established an additional program to limit utility industry investments in power generation sources that have high emissions of GHGs. The SB 1368 program establishes emission performance standards (EPS) for utility investments in baseload power generation facilities. The current EPS is 1,100 pounds of CO_2 per megawatt-hour of energy generation (0.5 metric tons CO_2/MWh). Utility investments subject to the EPS limitation include:

- Construction or purchase of new power plants designed and intended for baseload power generation;
- Purchase of existing power plants that are designed and intended for baseload power generation (combined-cycle natural gas power plants that were in operation or permitted before June 30, 2007, are exempt from this requirement);
- Ownership of shares in existing power plants that are designed and intended for baseload power generation (combined-cycle natural gas power plants that were in operation or permitted before June 30, 2007, are exempt from this requirement);

- Capital investment in existing utility-owned power plants that are designed and intended for baseload power generation if that investment would:
  - Increase generation capacity by 50 megawatts or more at a combined-cycle natural gas power plant that was permitted before June 30, 2007;
  - Extend the life of one or more units at other power plants by five years or more;
  - Increase the rated capacity of other power plants; or
  - Convert a non-baseload power plant into a baseload power plant.

Table 3.5-1 summarizes the current power generation mixes for the major electric utility companies in California.

Table 3.5-1. Current Renewable Procurement Status

Electric Utility Company	2003	2004	2005	2006	2007	2008	2009	2010
PG&E	11.5%	12.2%	12.1%	12.6%	11.8%	12.4%	14.1%	17.7%
SCE	16.6%	18.7%	17.6%	16.6%	15.5%	15.8%	16.8%	19.4%
SDG&E	3.7%	4.5%	5.2%	5.6%	5.2%	6.1%	10.2%	11.9%
Average	13.8%	14.0%	13.7%	13.1%	12.6%	13.0%	15.4%	17.9%

Source: CPUC 2011

3.5.2 Existing Conditions

Existing Greenhouse Gas Emissions

Statewide emissions of GHGs from relevant source categories in 1990 and later years are summarized in Table 3.5-2. Specific contributions from air basins such as MDAB are not currently specified as part of the state inventory. Emissions of CO_2 occur largely from combustion of fossil fuels. The major categories of fossil fuel combustion CO_2 sources can be broken into sectors for energy, industrial process and product use, agriculture and forestry, and waste. The energy sector includes energy industry such as power generation and petroleum refining, manufacturing industries and construction, transportation, and other sub-sectors such as commercial/ institutional and residential energy use.

Table 3.5-2. California Greenhouse Gas Emissions (Million Metric Tons CO2e, MMTCO2e)

Emission Inventory Category	1990	2000	2001	2002	2003	2004	2005	2006	2007	2008
Energy	386.4	401.8	417.0	414.7	412.7	422.5	414.2	411.56	417.0	413.8
Industrial processes and product use	18.3	25.6	25.6	26.4	27.0	28.0	28.8	29.7	30.0	30.1
Agriculture, forestry, and other land use	19.1	21.8	21.8	24.2	24.5	24.5	24.6	24.9	24.7	24.4
Waste	9.4	8.8	8.9	8.8	8.9	8.9	9.2	9.3	9.2	9.4
Gross emissions	433.3	458.0	473.2	474.2	473.2	483.9	476.7	475.3	480.9	477.7

Source: CARB 2010a.

Potential Effects of Climate Change

In November 2004, the California Climate Action Team (CAT) was formed to assist CARB with the Climate Change Scoping Plan. According to the 2006 CAT Report (CAT 2006), the following climate change effects, based on the IPCC trends, can be expected in California over the next century:

1. A diminishing Sierra snowpack, declining by 70 to 90 percent (70 to 80 percent under the medium emission scenarios and 90 percent under the higher emission scenarios), threatening the State's water supply;
2. Increasing temperatures from 8.0 °F to 10.4 °F under the higher emission scenarios, leading to an increase in the number of days ozone pollution standards are exceeded in most urban areas;
3. Increased vulnerability of forests as a result of pest infestation and increased temperatures; and
4. Increased electricity demand, particularly in the hot summer months.

Potential global warming impacts in California may include a decrease in snowpack, sea level rise, more extreme heat days per year, more high ozone days, increased frequency and intensity of wildfires, and more drought years. Secondary effects are likely to include a global rise in sea level, impacts on agriculture, water resources, changes in disease vectors, and changes in habitat and biodiversity. The 2009 California Climate Adaptation Strategy Report (California Natural Resources Agency 2009) illustrates the following climate change effects, based on the State's modeling of various scenarios as part of the 2009 Climate Change Impacts Assessment:

1. By 2050, temperatures are projected to increase by an additional 1.8 to 5.4 °F and by 2100, temperatures are projected to increase between 3.6 to 9 °F.
2. By 2050, overall precipitation is projected to decrease by 12 to 35 percent.
3. By 2050, 12 to 18 inches of sea-level rise is projected and by 2100, 21 to 55 inches (1.4 meters) of sea-level rise is projected.

The 2009 California Climate Adaptation Strategy Report found that in the eastern Riverside County region, temperature changes are projected cause a greater than 60 percent increase in household electricity consumption by 2060.

Ecosystem Carbon Storage

Most of the carbon found in organic matter is ultimately derived from CO_2 removed from the atmosphere by growing plants. Thus living organisms and organic matter in the soil represent a GHG (CO_2) that has been temporarily removed from the atmosphere. In addition to carbon stored in organic matter, atmospheric CO_2 can be stored in soils as carbonate minerals formed by chemical or biochemical reactions between CO_2 and calcium or magnesium oxide. The carbon stored in organic matter can be released back into the atmosphere by combustion (wildfires or use of organic matter as fuel); decay of organic matter; and respiration by plants, animals, and microorganism. Carbon stored in carbonate minerals can also be released back into the atmosphere by various chemical reactions.

Long term storage of carbon in terrestrial ecosystems occurs through one of three mechanisms:

- Long term, ongoing increases in biomass (primarily in vegetation biomass);
- Long term, ongoing increases in soil organic matter content; or
- Long-term, ongoing increases in mineralized carbon compounds, primarily as carbonate minerals in the soil.

Desert areas have low vegetation and animal biomass (combined aboveground and below ground), limited quantities of organic litter on the soil surface, and low soil organic matter contents (Oak Ridge National Laboratory 1998a, 1998b). Consequently, desert ecosystems have a low capacity for organic matter carbon storage that could buffer climate change effects due to increasing GHG concentrations.

A few recent studies, such as Wohlfahrt et al. (2008) claim that desert ecosystems may rival temperate forests or grasslands as a potential source of carbon storage. The Wohlfahrt et al. (2008) study was conducted over a 2-year period (2005 and 2006) at a site north of Las Vegas, Nevada, of which vegetation is generally similar to that found at the project site. The study estimated net annual uptake rates of 910 and 981 pounds of carbon per acre per year in 2005 and 2006 with an uncertainty of 65 percent. The study also estimated carbon uptake rates for soil biological crust biomass to be about 1,900 pounds per acre dry weight of biomass in 2005 and 2,050 pounds per acre dry weight of biomass in 2006.

A news review (Stone 2008) noted suggestions from a similar study in China that the estimated carbon storage was occurring as mineralized carbon in the soil rather than as biomass increases. Other researchers interviewed for the news review were dubious about the results reported in both the China study and in Wohlfahrt, et al. (2008).

The recognized mechanisms for carbonate mineral accumulation in soils include chemical formation through the weathering of silicate and oxide minerals, wet deposition of calcium carbonate dissolved in precipitation, and dry deposition of atmospheric dust particles rich in calcium carbonate (McAuliffe 2011). Non-biological mechanisms for CO_2 transport from the atmosphere to soils are dominated by formation of carbonic acid as CO_2 dissolves in water. Precipitation amounts in desert ecosystems are far too low to provide an important mechanism for CO_2 removal from the atmosphere. While carbonic acid in precipitation plays a role in the chemical reactions that occur during weathering of silicate and oxide minerals in rocks, the process is extremely slow. In addition, carbonic acid dissolves calcium carbonate, leaching it to deeper layers in the soil or into groundwater systems. This process keeps calcium carbonate from accumulating in upper soil layers in regions that receive abundant precipitation. Relatively high levels of calcium carbonate are common in desert soils because there is insufficient precipitation to dissolve and leach carbonate minerals from surface soils.

If the carbon uptake estimates made by Wohlfahrt, et al. (2008) occurred as mineralization of atmospheric CO_2 to calcium carbonate, the estimated carbon uptake rates would have added 7,583 pounds of calcium carbonate per acre during 2005 and 8,178 pounds of calcium carbonate per acre during 2006. Such rapid accumulations of calcium carbonate in soils would quickly cement the soils and make them unsuitable for the growth of many, if not most, desert plant species. Therefore, based on a critical review of Wohlfahrt et al., it is expected that desert ecosystems have a low capacity for organic matter carbon storage or buffering climate change.

3.6 CULTURAL RESOURCES

Cultural resources are categorized as buildings, sites, structures, objects, and districts under both federal law [for the purposes of the National Environmental Policy Act (NEPA) and the National Historic Preservation Act (NHPA)] and under California state law [for the purposes of the California Environmental Quality Act (CEQA)]. Three kinds of cultural resources, classified by their origins, are considered in this assessment: prehistoric, ethnographic, and historic.

Prehistoric archaeological resources are associated with the human occupation and use of California prior to prolonged European contact. These resources may include sites and deposits, structures, artifacts, rock art, trails, and other traces of Native American human behavior. In California, the prehistoric period began over 12,000 years ago and extended through the eighteenth century until 1769, when the first Europeans settled in California.

Ethnographic resources represent the heritage of a particular ethnic or cultural group, such as Native Americans or African, European, Latino, or Asian immigrants. They may include traditional resource-collecting areas, ceremonial sites, value-imbued landscape features, cemeteries, shrines, or ethnic neighborhoods and structures.

Historic-period resources, both archaeological and architectural, are associated with Euro-American exploration and settlement of an area and the beginning of a written historical record. They may include archaeological deposits, sites, structures, traveled ways, artifacts, or other evidence of human activity. Groupings of historic-period resources are also recognized as historic districts and as historic vernacular landscapes.

Under federal and state historic preservation law, cultural resources must be at least 50 years old to have sufficient historical importance to merit consideration of eligibility for listing in the National Register of Historic Places (NRHP) or in the California Register of Historical Resources (CRHR). A resource less than 50 years of age must be of exceptional historical importance to be considered for listing.

This section analyzes direct, indirect, and cumulative impacts to cultural resources. The current analysis is based on draft cultural resource assessments conducted by Chambers Group (Akyüz 2012a) and Applied Earthworks (Goldberg and McDougall 2012), an updated cultural resource assessment conducted jointly by Chambers Group and Applied Earthworks (Akyüz 2012b), an indirect and cumulative effects assessment (Smallwood et al. 2012), and BLM's determinations of eligibility and findings of effect (Kalish 2012) for the DHSP. These studies present an overview of previous cultural finds in the project vicinity and the results of field studies of the solar facility site and all portions of Alternative B and Alternative C. There are 98.3 acres of Alternative D (43.5% of the alternative, 3.9% of the total project area) located on private land which remain unsurveyed, and 7.04 acres of Alternative E (2.8% of the alternative, less than 1% of the total project area). In addition, this section relies upon three cultural resources assessments conducted by ECORP for the Desert Sunlight Solar Farm (DSSF) project, which describes fieldwork conducted at their solar field site and on portions of Alternatives B, C, and D and is incorporated by reference in Section 1.11 (Chandler et al. 2010, 2011; Chandler 2012).

3.6.1 Applicable Plans, Policies, and Regulations

Federal

There are numerous federal regulations, executive orders, and policies that direct management of cultural resources on federal lands and by federal agencies. These include the National Historic Preservation Act (NHPA), the Archaeological Resources Protection Act (ARPA), the Native American Graves Protection and Repatriation Act (NAGPRA), the American Indian Religious Freedom Act (AIRFA), Executive Order 13007, and the Antiquities Act. For the Bureau of Land Management (BLM) in particular, the Federal Land Policy and Management Act (FLPMA) and several sections of BLM Manuals are relevant as well. The following is a discussion of the most pertinent laws affecting the DHSP and the impact analysis included in the Final EIS and Plan Amendment.

The principal federal law addressing cultural resources is the NHPA of 1966, as amended (16 United States Code [USC], Section 470), and its implementing regulations (36 Code of Federal Regulations [CFR], Part 800), that primarily address compliance with Section 106 of the act. Section 106 of the act requires that Federal agencies take into account the effect of any undertaking on historic properties, and to afford the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment. The implementing regulations describe the process for identifying and evaluating historic properties, for assessing the effects of federal actions on historic properties, and for consulting with interested parties, including the State Historic Preservation Office (SHPO), Indian tribes, local governments, and the public to develop measures that would avoid, reduce, or minimize adverse effects to historic properties. The results of this consultation are presented in Chapter 5. The term "historic properties" refers to cultural resources that are listed on, or meet specific criteria of eligibility for listing on, the National Register of Historic Places. These criteria consist of the quality of significance in American history, architecture, archeology, engineering, and culture present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

A. That are associated with events that have made a significant contribution to the broad patterns of our history; or

B. That are associated with the lives of persons significant in our past; or

C. That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

D. That have yielded, or may be likely to yield, information important in prehistory or history.

Archaeological Resources Protection Act of 1979 (ARPA) (16 USC 470aa et seq.) protects archaeological resources from vandalism and unauthorized collecting on public and Indian lands.

Requirements for responding to discoveries of Native American human remains and associated funerary objects on federal land are addressed under the NAGPRA (Public Law 101-601) and its implementing regulations found at Title 43 CFR Part 10. For those portions of the proposed project or alternative on public land, the BLM will comply with the law and regulations by deter-

mining lineal descendants and culturally affiliated Indian tribes and by carrying out appropriate treatment and disposition of any discovered remains, including transfer of custody.

The American Indian Religious Freedom Act of 1978 (AIRFA) (Title 42, U.S. Code, Section 1996) establishes policy of respect and protection of Native American religious practices. It seeks to correct federal policies and practices that could (a) deny access to sacred sites required in traditional religions, (b) prohibit use and possession of sacred objects necessary for religious ceremonies, and (c) intrude upon or interfere with religious ceremonies. The BLM complies with AIRFA by obtaining and considering the views of traditional religious practitioners as part of the NEPA compliance process.

Executive Order 13007 directs federal agencies to accommodate access to, and ceremonial use of, Indian sacred sites by Indian religious practitioners. It requires federal agencies to avoid adversely affecting the physical integrity of sacred sites to the extent practicable, permitted by law, and not clearly inconsistent with essential agency functions. EO 13007 reinforces the purposes expressed in AIRFA. The BLM complies with EO 13007 by consulting with tribal governments and Indian religious practitioners as part of the NEPA compliance process.

The Antiquities Act of 1906 [16 United States Code (USC) 431–433] establishes criminal penalties for unauthorized destruction or appropriation of "any historic or prehistoric ruin or monument, or any object of antiquity" on federal land; empowers the President to establish historical monuments and landmarks.

The Federal Land Policy and Management Act (FLPMA) establishes policy and goals to be followed in the administration of public lands by the BLM. The intent of FLPMA is to protect and administer public lands within the framework of a program of multiple-use and sustained yield, and the maintenance of environmental quality. Particular emphasis is placed on the protection of the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resources and archaeological values.

Directives for land use planning in the BLM Land Use Planning Manual H-1601-1 and BLM Manual Sections 8110.4 and 8130 require categorizing known and suspected cultural resources according to their nature and relative preservation value. Resource types are allocated to appropriate use categories that include scientific use, conservation for future use, traditional use, public use, and experimental use or those resources discharged from management. These directives also require identifying priority geographic areas for new field inventory or protective measures. These decisions would be based on a probability for unrecorded significant resources, imminent threats from natural or human-caused deterioration, or potential conflict with other resource uses.

A Memorandum of Agreement (MOA) is being developed for this project for the purpose of NHPA compliance. The MOA would be among the BLM, SHPO, EDF Renewables, and interested Indian tribes. The Advisory Council on Historic Preservation would be invited to participate. The MOA will include a list of historic properties located within the APE, require that a Historic Property Treatment Plan be developed and implemented prior to the issuance of a Notice to Proceed, provide for review by interested parties of draft documents resulting from implementation of the Historic Property Treatment Plan, provide for the management of unanticipated discoveries of cultural resources, address treatment of Native American human remains, and include reporting requirements. In addition, the MOA provides a phased approach to the identification and evaluation where access to private land to conduct archaeological surveys has

not been granted. NRHP eligibility evaluations and treatment of historic properties would be carried out before project construction. Once the MOA is signed, which will be before the Record of Decision (ROD) for this EIS is signed, compliance with Section 106 of the NHPA will be considered complete (Kalish 2012).

State

There are numerous state regulations and policies that direct management of cultural resources on state lands and by state agencies. The following is a discussion of the most pertinent laws affecting the DHSP and impact analysis from a state perspective.

Under CEQA, cultural resources listed in, or determined to be eligible for listing in, the California Register of Historical Resources (CRHR) or a local register meet the CEQA definition of "historical resources" and must be given consideration in the CEQA process. For this Draft EIS and Plan Amendment, effects on historical resources may be considered impacts of the Proposed Action. Under CCR, Title 14, Chapter 11.5, properties listed on or formally determined to be eligible for listing in the NRHP are automatically eligible for listing in the CRHR. A resource is generally considered to be historically significant under CEQA if it meets the criteria for listing in the CRHR. These criteria are essentially the same as the eligibility criteria for the NRHP. In addition to being at least 50 years old, a resource must meet at least one (and may meet more than one) of the following four criteria:

- Criterion 1, is associated with events that have made a significant contribution to the broad patterns of our history;
- Criterion 2, is associated with the lives of persons significant in our past;
- Criterion 3, embodies the distinctive characteristics of a type, period, or method of construction, or represents the work of a master, or possesses high artistic values; or
- Criterion 4, has yielded, or may be likely to yield, information important to history or prehistory.

In addition, historical resources must also possess integrity of location, design, setting, materials, workmanship, feeling, and association.

Public Resources Code (PRC), Section 5097.98(b) and (e) requires a landowner on whose property Native American human remains are found to limit further development activity in the vicinity until he/she confers with the Native American Heritage Commission-identified Most Likely Descendants (MLD) to consider treatment options. In the absence of MLDs or of a treatment acceptable to all parties, the landowner is required to re-inter the remains elsewhere on the property in a location not subject to further disturbance. Section 5097.99 establishes as a felony the acquisition, possession, sale, or dissection with malice or wantonness Native American remains or funerary artifacts. Finally, Section 5097.991 establishes as state policy the repatriation of Native American remains and funerary artifacts.

Health and Safety Code (HSC), Section 7050 makes it a misdemeanor to mutilate, disinter, wantonly disturb, or willfully remove human remains found outside a cemetery and further requires a project owner to halt construction if human remains are discovered and to contact the county coroner.

Riverside County

The following policies outlined in the Riverside County General Plan address cultural resources:

OS 19.2 Review all proposed development for the possibility of archaeological sensitivity.

OS 19.3 Employ procedures to protect the confidentiality and prevent inappropriate public exposure of sensitive archaeological resources when soliciting the assistance of public and volunteer organizations.

OS 19.4 Require a Native American Statement as part of the environmental review process on development projects with identified cultural resources.

The following policies pertain to historical resources:

OS 19.5 Transmit significant development proposals to the History Division of the Riverside County Regional Park and Open-Space District for evaluation in relation to the destruction/preservation of potential historical sites. Prior to approval of any development proposal, feasible mitigation shall be incorporated into the design of the project and its conditions of approval.

OS 19.6 Enforce the Historic Building Code so that historical buildings can be preserved and used without posing a hazard to public safety.

OS 19.7 When possible, allocate resources and/or tax credits to prioritize retrofit of County historic structures, which are irreplaceable.

3.6.2 Existing Conditions

Information provided regarding the setting of the DHSP places it in its geographical and geological context. Additionally, the prehistoric, ethnographic, and historical background provides the context for the evaluation of the NRHP and CRHR eligibility of any identified cultural resources within the Area of Potential Effects (APE) for the DHSP.

Regional Setting

The proposed DHSP site is located in eastern Riverside County within the central Chuckwalla Valley, an east-southeast-trending valley in California's Mojave Desert Geomorphic Province. This province is characterized by east-west-trending ranges separated by desert valleys with enclosed drainages and dry lakes. DHSP is located within the Chuckwalla Valley, which is bounded on the west by the Eagle Mountains, on the east by the Palen Mountains, and to the north by the Coxcomb Mountains. The Chuckwalla Mountains are to the south. The elevation of Chuckwalla Valley ranges from under 400 feet at its lowest point to 1,800 feet along the valley flanks. The surrounding mountains reach between 3,000 and 5,000 feet in elevation. This area receives an average of 5 inches of rain per year. The site is located near the transition between the Mojave and Colorado Deserts.

Environment

Identifying the kinds and distribution of resources necessary to sustain human life in an environment, and the changes in that environment over time is central to understanding whether and how an area was used during prehistory and history. During the time that humans have lived in California, the Mojave Desert has undergone several climatic shifts. These shifts have resulted in

variable availability of vital resources, and that variability has influenced the scope and scale of human use of the vicinity of the DHSP site. Consequently, it is important to consider the historical character of local climate change, or the paleoclimate, and the effects of the paleoclimate on the physical development of the area and its ecology.

Studies of pack-rat middens and lake-level studies have provided a picture of the paleoclimate and paleoecology of the Mojave and Colorado Deserts. During prehistoric times, this region fluctuated between cool-and-moist and warm-and-dry periods. These fluctuations in temperature and moisture were crucial to the human occupation of the region. Environmental changes also had important implications for the DHSP vicinity specifically, because of the proximity of Palen Lake. During cool, wet times the regional lakes filled and the necessary resources for human occupation were available. During warm, dry times the lakes dried and the region became a difficult place to live and traverse.

Geology

The geological formations in the proposed project vicinity are varied. Quaternary lake deposits of Ford, Palen, and Hayfield dry lakes lie in the lowest portions of Chuckwalla Valley. Ford and Palen dry lakes are bordered by extensive areas covered by Quaternary dune sand. Around these areas and throughout the other valleys, lies Quaternary alluvium. Nearly all of the mountain ranges within the DHSP region are fringed by wide aprons of older Pleistocene alluvial fans. A few small areas also contain some earlier Plio-Pleistocene non-marine sediments. Where active drainages have been incised into the Pleistocene deposits, fingers of the more recent alluvium extend upwards toward the mountain ranges. The Pleistocene alluvial deposits are of particular relevance for cultural resources because they have formed relatively stable surfaces, often overlain with desert pavement that has preserved the traces of prehistoric trails as well as other archaeological features. Desert pavement is a surface of angular, interlocking fragments of pebbles, gravel, or boulders in arid areas which forms on level or gently sloping desert flats, fans, or bajadas and lake and river terraces dating to the Pleistocene Epoch. These alluvial terraces also were important sources of fine grained cryptocrystalline tool stone (Laylander and Schaefer 2010).

Geomorphology and Potential for Subsurface Archaeological Resources

Geomorphology is the scientific study of landforms and the processes that shape them. Geomorphologists seek to understand why landscapes look the way they do, to understand landform history and dynamics, and to predict future changes through a combination of field observation, physical experiment, and modeling. Archaeologists use geomorphology to understand how archaeological sites were formed and to predict where sites of various types can be found. Over time, objects, sites and other man-made objects are moved, buried, or exposed by wind, water, plant growth, animal activity, and other natural processes. Geomorphology is a technique that helps archaeologists interpret physical clues in order to understand the specific nature of the changes that have taken place over time. In the case of the current analysis, geomorphology can be used to predict the location of buried sites, to estimate their current condition, and to estimate the relative age of various geological or archaeological features.

No geomorphological investigations were completed by the Applicant for the DHSP vicinity in support of the soils, geology, or cultural resources sections of the DEIS. However, Applied Earthworks combined information collected by the California Division of Mines and Geology (Jen-

nings 1967) and the results of a geoarchaeological field assessment conducted by ECORP for the Desert Sunlight Solar Facility with their own detailed examination of aerial images of the project area and the vicinity. Mapped units are divided between Holocene deposits, which have the potential for containing buried prehistoric deposits, and Pleistocene aged deposits which do not. Two Pleistocene units were identified. These include old alluvial fan deposits (Qfo) and very old alluvial fan deposits (Qfvo). On the surface, these deposits consist of well-developed desert pavement with strong varnish, dating to between 14 and 30 thousand years old. While areas where these geologic units are present would have been attractive as lithic procurement localities for prehistoric peoples, prehistoric archaeological sites created through procurement activities, would be limited to the surface. Aerial imagery indicates that these units are located in a small area along the western boundary of the solar facility area and along Alternative B/C of the gen-tie, accounting for no more than 5 percent of the project area. Five Holocene units were identified: young alluvial stream deposits (Qya), young alluvial sheet wash deposits (Qaly), young alluvial deposits (Qal), young alluvial fan deposits (Qfy), and intermediate alluvial fan deposits (Qfm). These five Holocene deposits are capable of burying prehistoric cultural deposits. However, the higher energy of deposition of Qya deposits may yield a lower degree of site integrity, transporting lighter objects down slope. Using the ECORP model, based on analysis of aerial images and the Jennings geologic map, it can be inferred the approximately 95 percent of the solar facility site has Holocene aged deposits.

Models which predict the sensitivity for buried resources take into account multiple factors. These include the geomorphological factors of energy of deposition and age of deposition, and the cultural factor of suitability or attractiveness. Current surface and environmental conditions and the results of previous survey work indicate that recent (or late) prehistoric exploitation and use of the central and northern portion of the valley was minimal. Site density increases near the upper portions of alluvial fans where raw lithic material may be obtained, or near lake features and associated dune complexes, where lacustrine resources were available during wetter periods. Thus, while geologic conditions in 95 percent of the project area are capable of burying prehistoric sites and preserving them with a high a degree of integrity, the lack of attractiveness to prehistoric peoples for much of the project area suggests a low to moderate sensitivity for buried sites. However, if Holocene subsurface deposits indicate different conditions in the vicinity of the project, such as lacustrine deposits, this conclusion must be reevaluated. No such deposits were observed during subsurface investigations during the geoarchaeological investigations conducted by ECORP in the DSSF project. Therefore, while geologic factors indicated that nearly the entire solar facility site has the potential for buried prehistoric sites, cultural factors lead to the conclusion that there is only a moderate potential for buried resources within the project area as a whole. The east-west generation tie-line segments for Alternatives B, C, and E and south trending segment of Alternative D that ties into the Red Bluff Substation are located in closer proximity to the culturally sensitive portion of the valley, and therefore, are highly sensitive for buried resources, and are the only exception. This possibility of finding buried sites in the Chuckwalla Valley has recently been confirmed at the nearby Genesis Solar Energy Project (GSEP) project where multiple Paleo-Archaic resources have been found above the high lake stand two to three feet below the modern ground surface during construction grading (George Kline BLM, personal communication).

Prehistoric Context

Human populations have occupied the California desert for at least 10,000 years (Moratto 1984). Stratified sites that would aid in providing temporal controls and help establish a cultural chronology are virtually unknown in the study area. The earliest explorations of the Mojave and Colorado Deserts took place in the 1930s and 1940s. During this time a basic cultural-historical outline was established, which has formed the foundation for subsequent efforts. However, these early attempts were based on surface scatters and inference rather than large-scale data recovery projects or regional surveys.

Numerous cultural resource management projects have resulted in dramatic increases in our understanding of the prehistory of the region. Two of the most notable synthetic works include the BLM's large-scale cultural resources inventory of the Central Mojave and Colorado Desert Regions (Gallegos et al. 1980) and Crabtree's (1980) overview. It was not until the late 1990s that any archaeological site was excavated and reported in the literature within 100 kilometers (km) of the DHSP area. Jones and Klar's (2007) recent review of California archaeology builds from where these earlier authors left off, including the results of recent data recovery projects. The following discussion and culture-historical sequence borrows heavily from the Laylander and Schaefer's (2010) recent prehistoric context for the region, except where otherwise referenced.

Cultural Periods and Patterns

Four successive chronological periods, extending back over a period of at least 12,000 years and each with distinctive cultural patterns, provide a framework for understanding the prehistory of the Colorado Desert. In general, the broader periods include (1) the Pleistocene (Malpais and Clovis patterns); (2) the Early Holocene (San Dieguito and Lake Mojave patterns); (3) the Middle Holocene and Early Late Holocene (Pinto, Amargosa, Deadman Lake, and Gypsum patterns); and (4) the Late Prehistoric period (Saratoga Spring, Rose Spring, Yuman, Patayan, Hakataya, and Shoshonean patterns).

Pleistocene Period (Clovis pattern; prior to 10,000 B.C.)

The question of when humans first entered North America remains an important and unresolved issue in human prehistory. The earliest occupation in the wider region that is presently accepted by scientific consensus is represented by the Clovis pattern, dated to ca. 11,500 B.C. Large, foliate projectile points with concave, fluted bases are the hallmark of the Clovis pattern. Reported Clovis sites are fairly numerous in the Mojave Desert, but they are scarce in the Colorado Desert, although occurrences are reported from Pinto Basin, Ocotillo Wells, and the Yuha Desert (Rondeau et al. 2007:64).

Early Holocene period (San Dieguito or Lake Mojave pattern; ca. 10,000-6000 B.C.)

The Early Holocene period is referred to as the San Dieguito pattern in the Colorado Desert and the Lake Mojave pattern in the Mojave Desert. Three phases have been defined for this pattern. Each successive phase is characterized by the addition of new, more sophisticated tool types to the preexisting tool kit. The early Holocene period, as reconstructed from assemblage characteristics and site associations, has been seen as being represented by small, mobile bands exploiting both small and large game and collecting seasonally available wild plants. The

absence or scarcity of milling tools in early Holocene assemblages has been interpreted as reflecting a lack of hard nuts and seeds in the diet. However, manos and portable metates are now increasingly being recognized at coastal sites that have been radiocarbon dated to earlier than 6000 B.C. Arguments have also been advanced for the presence of a well-developed pattern of early Holocene grinding tools, based on finds from the Trans-Pecos area of Texas. Site distributions indicate some of the basic elements of the early Holocene settlement system. The sites may be found on any flat area, but the largest aggregations seem to occur on mesas and terraces overlooking large washes or the margins of lakes. These are areas where a variety of plant and animal resources would have been accessible and where water was available at least seasonally.

Middle Holocene to Early Late Holocene Period (Pinto, Amargosa, Deadman Lake, and Gypsum patterns; ca. 6000 B.C.–A.D. 500)

The long millennia of the middle Holocene period and the early portion of the late Holocene period have often been designated as the Archaic period, characterized by unspecialized hunting-gathering adaptations. Sites dating to this period have been identified more frequently in the Great Basin, Mojave Desert, and Sonoran Desert east of the Colorado River than in the Colorado Desert. It has been suggested that the California deserts were inhospitable during the middle Holocene period due to a hotter-than-present climate, particularly during the so-called Altithermal phase between ca. 5000 and 2000 B.C., and that hunter-gatherers were forced to concentrate around a limited number of favored locations or emigrate to more habitable regions. The later portion of the middle Holocene may have seen the advent of Yuman speakers in the Colorado Desert.

Pinto, Amargosa, Gypsum, and Deadman Lake patterns are among the categories applied to either chronologically successive or regionally specialized variants of middle Holocene and early late Holocene sites. Key elements in distinguishing these patterns have included large, roughly shaped, side- or corner-notched, indented-base ("Pinto") points; large, corner-notched, eared, or split-stem ("Elko") points; and large, contracting-stem ("Gypsum") points. The Pinto pattern was originally recognized in Joshua Tree National Park's Pinto Basin, although the Stahl site in the southwestern Great Basin has often subsequently been used as a type locality for the pattern. The Amargosa pattern, encompassed most of the Colorado Desert and was divided into three phases that also overlapped the early portion of the late prehistoric period (Sutton et al. 2007:236). The Gypsum pattern was linked with the Pinto pattern into an early Pinto-Gypsum pattern, but it was subsequently reassigned to the later portion of the period under discussion, between ca. 2000 B.C. and A.D. 500. The Deadman Lake pattern is a newly proposed entity assigned to the end of the middle Holocene period and identified at Twenty-nine Palms in the southern Mojave Desert (Sutton et al. 2007:239-240).

Some middle Holocene sites have been identified along the boundary between the Colorado Desert and the Peninsular Ranges and at favored habitats at springs and tanks. Additional early sites fairly certainly are still to be discovered, buried under alluvial fans and wash deposits, sand dunes, Lake Cahuilla sediments, or Colorado River valley alluvium.

Late Prehistoric Period (Saratoga Spring, Rose Spring, Yuman, Patayan, Hakataya, and Shoshonean patterns; ca. A.D. 500-1900)

Major innovations during the late Holocene period included the introduction of pottery making by the paddle-and-anvil technique, bow-and-arrow technology, floodplain agriculture, and cremation. The timing of these innovations is still not very precisely known. Agriculture and ceramics were probably introduced either directly from northwestern Mexico or by way of the Hohokam culture on the Gila River. The bow and arrow may have come from the north, where their documented presence (as indicated by small projectile points) is earlier than in the Colorado Desert.

The major late prehistoric patterns are based in part on technological changes and in part on presumed ethnic affiliations. The Saratoga Spring or Rose Spring pattern is defined primarily by the presence of small, expanding-stem ("Rose Spring" and "Eastgate") projectile points, which are interpreted as marking the initial appearance of the bow and arrow. This pattern, generally dated between ca. A.D. 500 and 1200, is well-known in the Mojave Desert, but it has not been clearly reported yet in the Colorado Desert (Sutton et al. 2007).

Yuman, Patayan, and Hakataya are largely synonymous terms for ceramic-bearing sites in southern California after ca. A.D. 500. Although the distribution of these patterns is strongly correlated with the ethnohistoric range of the Yuman linguistic family, it also includes Takic (Uto-Aztecan) areas. The Yuman/Patayan pattern has been further divided into three phases ("Yuman I/II/III" or "Patayan I/II/III") on the basis of proposed changes in pottery traits and types and on proposed correlations with the presence or absence of Lake Cahuilla. The Shoshonean (cf. Northern Uto-Aztecan) pattern is a construct applied to sites postdating ca. A.D. 1200 in the Mojave Desert; these sites, like those of the Yuman/Patayan/Hakataya pattern, are characterized by small, triangular ("Cottonwood") and side-notched ("Desert Side-notched") projectile points. Linguistically, the late prehistoric period likely saw the appearance of Takic-speaking Cahuilla and Serrano in the western Colorado Desert and the southern Mojave Desert; Numic-speaking Chemehuevi in the eastern Mojave Desert and northeastern Colorado Desert; River Yuman-speaking Quechan, Halchidhoma, and Mohave on the lower Colorado River; and Delta-California Yuman-speaking Cocopa and Kumeyaay in the southern Colorado Desert.

Lake Cahuilla in the Salton Basin was a key element in late prehistoric adaptations to the Colorado Desert. The lake arose in several separate episodes during the last 1,000 years and as recently as the seventeenth century A.D., as has been documented by archaeological and geological studies, while more scattered evidence attests to earlier stands. When the lake was present, it offered a range of resources that were not otherwise available in the basin, including freshwater fish, aquatic birds, freshwater mussel, and marsh plants. On the other hand, when the lake was present, the important Obsidian Butte source of obsidian tool stone was inaccessible. A longstanding debate has concerned whether the lake played a central or only a secondary role within Colorado Desert settlement systems and how severely its rises and falls disrupted the lives and lifeways of the region's inhabitants.

Between A.D. 1000 and 1700, desert peoples focused on the lower Colorado River valley appear to have extended their focus beyond the Colorado River floodplain, adopting a more mobile, diversified resource procurement pattern, with increased travel between the river and Lake Cahuilla to the west. Long-range travel to special resource collecting zones and ceremonial locales, trading expeditions, and possibly warfare are reflected by the numerous trail systems

seen throughout the Colorado Desert. Pot drops, trailside shrines, and other evidence of transitory activities are often associated with these trails. The Chuckwalla Valley encompasses an important travel route between the Colorado River and the Coachella Valley.

Several local varieties of pottery appeared during the late prehistoric period. Many of the pictographs, petroglyphs, and bedrock grinding features in the Colorado Desert were probably also produced during the late prehistoric period, although it is difficult to date such features directly or to determine their cultural affiliations. During this period, and possibly also in the preceding middle Holocene period, specific volcanic and sandstone rock outcrops along the Colorado and Gila rivers were exploited for the manufacture of stone pestles and portable milling slabs.

Regional Prehistory

Over 200 prehistoric sites have been recorded in the Chuckwalla Valley. Past peoples inhabiting the area appear to have been very mobile, especially during late prehistoric and early historic times. During early historic times, native peoples inhabited towns/hamlets located along the Colorado River, within the Coachella Valley, and at major desert springs/oases.

The Chuckwalla Valley was a relatively closed resource exploitation zone. It served as an east-west oriented trade route/corridor between the Pacific Ocean and the Colorado River/greater Southwest. An extensive network of trails is present within the Chuckwalla Valley. Given its orientation and location, the valley may have been neutral territory (i.e., a buffer zone), unclaimed by neighboring native peoples. Quarry sites probably were "owned" by tribal groups. The distribution of particular types of toolstones may have corresponded to a group's territorial boundaries, and a toolstone type may not have occurred beyond the limits of a group's specific territory.

Within the Chuckwalla Valley, prehistoric sites are clustered around springs, wells, and other obvious important features/resources. Sites include villages with cemeteries, occupation sites with and without pottery, large and small concentrations of ceramic sherds and flaked stone tools, rock art sites, rock shelters with perishable items, rock rings/stone circles, geoglyphs, and cleared areas, a vast network of trails, markers and shrines, and quarry sites. Possible village locations are present at Palen Lake, Granite Well, and Hayfield Canyon.

A cluster of temporary habitation and special activity (task) sites occurs around a quarry workshop in the Chuckwalla Valley. The Chuckwalla Valley aplite quarry workshop complex probably was used throughout the Holocene. During this period, Chuckwalla Valley most likely was occupied, abandoned, and reoccupied by a succession of ethnic groups. In the Early Holocene (i.e., Lake Mohave complex times), the area may have been relatively densely inhabited. During the Middle Holocene (i.e., Pinto and Gypsum complexes period) it may only have been sporadically visited. The subsequent Late Holocene Rose Spring and Late Prehistoric periods probably witnessed reoccupation of the valley by Yuman and Numic-speaking peoples.

Ethnohistoric Context

The following discussion is based primarily on Bean (1978), Bean and Toenjes (2010), Bee (1983), Harwell and Kelly (1983), Kroeber (1925) and Stewart (1983a, b). The information gathered in the separate literature review compiled by Earle and Associates entitled "Ethnographic and Ethnohistoric Information on Chuckwalla Valley and Vicinity" is not included here.

A number of ethnographically documented culture groups are associated with the Chuckwalla Valley through historical use and oral history. These include the Cahuilla, Serrano, Chemehuevi, Mohave, Quechan (Yuma), Maricopa, and Halchidoma. All of these groups were at home in the deserts, but lived primarily near reliable water sources including the Colorado River, inland lakes, and numerous seeps and springs.

Research covering the ethnographic period for this region suggests a relative fluidity in territorial boundaries over time. This fluidity, in general, is represented in the use, abandonment, intrusion, and displacement of the people along the Colorado River, in particular. Further, much of this shifting in territories and boundaries during the ethnographic period can be assigned to intertribal warfare. Such activities may have fluctuated between territorial controls of the local resources to a joint-use model where multiple groups may have had varying levels of access to those resources.

Those who lived along the Colorado were linked in a well-established system of alliances and antagonistic relationships that stretched from the Pacific to the inland horticultural societies as far east as Hopi. This system also ordered a system of trade and reciprocal exchange. Ethnic boundaries at the tribal rather than band level and tribal ownership of land were also tailored to the environmental situation.

In the northern Sonoran Desert during the Protohistoric and Historical periods, traditional allies and trading partners formed two antagonistic groups. The culture groups along the Colorado River to the east of the DHSP were part of this "international" network.

In one group, the Halchidhoma and Maricopa were allied with the Pima, Papago, and Cocopa among others to the east, and the Cahuilla, Diegueño, and Serrano to the west. The Gabrielino were trading partners. In the opposing group, the Mohave and Quechan were allied with the Chemehuevi (Southern Paiute) and Yavapai to the north and east, and the Kamia to the west. They were trading partners with the Northern Serrano, Chumash, Yokuts, and Tubatulabal to the west. Southwestern Pueblo peoples, such as the Hopi, were interested trading partners in this system, but they were largely neutral. The Kohuana and Halyikwamai along the lower Colorado River, though notably of an affinity with the Maricopa and Halchidhoma, at times cooperated with the Mohave and Quechan.

The Cahuilla

A wealth of information exists regarding traditional and historic Cahuilla society and culture (Bean and Toenjes 2010). The Cahuilla language, divided into Desert, Pass, and Mountain dialects, has been assigned to the Cupan subfamily of the Takic branch of the Uto-Aztecan linguistic family. Territory traditionally claimed by the Cahuilla was topographically complex, including mountain ranges, passes, canyons, valleys, and desert. Bean (1978:375) described it as, "…from the summit of the San Bernardino Mountains in the north to Borrego Springs and the Chocolate Mountains in the south, a portion of the Colorado Desert west of Orocopia Mountain to the east, and the San Jacinto Plain near Riverside and the eastern slopes of Palomar Mountain to the west." The natural boundaries of the desert, mountains, hills, and plains separated the Cahuilla from surrounding Native American groups. The Cahuilla interacted with surrounding peoples via intermarriage, ritual, trade, and war. The Cahuilla, Gabrielino, Serrano, and Luiseño shared common cultural traditions, with the Cahuilla having especially close ties to the two former groups.

Cahuilla villages usually were located in canyons or on alluvial fans near water and food patches. The area immediately around a village was owned in common by a lineage. Other lands were divided into tracts owned by clans, families, and individuals. Numerous sacred sites with rock art were associated with each village. Villages were connected by trail networks used for hunting, trading, and social visiting. Trading was a prevalent economic activity. Some Cahuilla were trading specialists. The Cahuilla went as far west as the Channel Islands and east to the Gila River to trade.

Hunting and meat processing were done by men. Game included deer, mountain sheep, pronghorn, rabbits, rodents, and birds. These were pursued by individuals and communal hunting groups. Blinds, pits, bows and arrows, throwing sticks, nets, snares, and traps were used to procure game. Communal hunts with fire drives sometimes occurred.

The Cahuilla had access to an immense variety of plant resources present within a diverse suite of habitats. Several hundred plant species were used for food, manufacture, and medicine. Acorns, mesquite and screw beans, pinyon nuts, and cactus fruits were the most important plant foods. They were supplemented by a host of seeds, tubers, roots, bulbs, fruits and berries, and greens. Corn, beans, squash, and melons were cultivated. Over 200 species of plants were used as medicines.

Structures varied in size from brush structures to dome-shaped or rectangular houses, 15–20 feet long, and ceremonial houses. The chief's house usually was the largest. Used for many social, ceremonial, and religious functions, it was located near a good water source. It generally was next to the ceremonial house, which was used for rituals, curing, and recreational activities. Other structures included a communal men's sweathouse and granaries.

Mortars and pestles, manos and metates, pottery, and baskets were used to process and prepare plant and animal foods. Cahuilla material culture included a variety of decorated and plain baskets; painted/incised pottery; bows, arrows, and other hunting-related equipment; clothing, sandals, and blankets; ceremonial and ritual costumes and regalia; and cordage, rope, and mats. Games and music were important social and ritual activities for the Cahuilla.

The Cahuilla had named clans, composed of between 3 and 10 lineages, with distinct dialects, common genitors, and a founding lineage. Each lineage owned particular lands, stories, songs, and anecdotes. Each lineage occupied a village and controlled specific resource areas. Clan territory was jointly owned by all clan members. Territory ownership was established by marked boundaries (rock art, geographic features), and oral tradition. Most of a clan's territory was open to all Cahuilla. Kinship rules determined rights to assets and responsibilities within a lineage. Each lineage cooperated in defense, large-scale subsistence activities, and ritual performance. The founding lineage within a clan often owned the office of ceremonial leader, the ceremonial house, and sacred bundle. Artifacts and equipment used in rituals and subsistence was owned by individuals and could be sold or loaned.

The office of lineage leader usually passed from father to eldest son. He was responsible for correct performance of rituals, care of the sacred bundle, and maintenance of the ceremonial house. The lineage leader also determined when and where people could gather and hunt, administered first-fruits rites, and stored food and goods. He knew boundaries and ownership rights, resolving conflict with binding decisions. The lineage leader met with other lineage leaders concerning various issues. He was assisted in his duties by a hereditary official respon-

sible for arranging details for performance of rituals. Other functionaries included song leaders/ceremonialists, assisted by singers and dancers.

Laws were enforced by ritual, stories, anecdotes, and direct action. Supernatural and direct sanctions were used. Tradition provided authority. The past was the referent for the present and future. Old age provided access to privilege, power, and honor. Reciprocity was a significant expectation. Doing things slowly, deliberatively, and thoughtfully was stressed. Integrity and dependability in personal relations were valued. Secrecy and caution were exercised in dealing with knowledge.

Disputes between Cahuilla villages usually arose over access to resources. Other causes included sorcery, personal insults, kidnapping of women, nonpayment of bride price, and theft. Armed conflict occurred after all other efforts to resolve things had failed. A lineage leader and/or skillful warrior lead a temporary war party. Community rituals were held before and after a fight, which usually involved ambush.

Ritual and ceremony were a constant factor in Cahuilla society. Some ceremonies were scheduled and routine, while others were sporadic and situational. The most important ceremonies were the annual mourning ceremony, the eagle ceremony, rites of passage (especially those associated with birth, naming, puberty, and marriage), status changes of adults, and rituals directed towards subsistence resources. The main focus was upon performance of cosmologically oriented song cycles, which placed the Cahuilla universe in perspective, reaffirming the relationship(s) of the Cahuilla to the sacred past, present, to one another, and to all things.

The Serrano

The Serrano Cahuilla shared many traits and artifacts with the Cahuilla, discussed above (Bean and Toenjes 2010). The Serrano spoke a language belonging to the Serran Group of the Takic subfamily of the Uto-Aztecan family. It is nearly impossible to assign definite boundaries to Serrano territory. Territory traditionally claimed by the Serrano included the San Bernardino Mountains east of Cajon Pass, lands in the desert near Victorville, and territory extending east in the desert to Twenty-nine Palms and south to, and including, the Yucaipa Valley.

The Serrano occupied small village-hamlets located mainly in the foothills near water sources. Others were at higher elevations in coniferous forest, or in the desert. The availability of water was a critical determinant of the nature, duration, and distribution of Serrano settlements.

Women gathered, and men hunted and occasionally fished. Topography, elevations, and biota present within the Serrano territory varied greatly. Primary plant foods varied with locality. In the foothills, they included acorns and pinyon nuts. In the desert, honey mesquite, pinyon, yucca roots, and cactus fruits were staples. In both areas they were supplemented by a variety of roots, bulbs, shoots, and seeds, especially chia. Among primary game animals were deer, mountain sheep, pronghorn, rabbits, rodents, and quail. Large game was hunted with bows and arrows. Small game was taken with throwing sticks, traps, snares, and deadfalls. Meat was cooked in earth ovens. Meat and plant foods were parched or boiled in baskets. Plant foods were ground, pounded, or pulverized in mortars and pestles or with manos and metates. Processed meat and plant foods were dried and stored. Occasional communal deer and rabbit hunts were held. Communal acorn, pine nut, and mesquite gathering expeditions took place. These communal activities involved several lineages under a lineage leader's authority.

Serrano houses were circular, domed, individual family dwellings, with willow frames and tule thatching. They were occupied by a husband and wife along with their children, and often other kin. Houses were mainly used for sleeping and storage. Most daily activities occurred outside, often in the shade of a ramada (a flat-roofed, open-sided shade structure) or other sun cover.

Settlements usually had a large ceremonial house where the lineage leader and his family lived. It was the social and religious center for each lineage/lineage set. The latter was two or more lineages linked by marriage, economic reciprocity, and ritual participation. Other structures included semi-subterranean, earth-covered sweathouses located near water, and granaries.

Serrano material culture was very similar to that of the Cahuilla. Stone, wood, bone, plant fibers, and shell were used to make a variety of artifacts. These included highly decorated baskets, pottery, rabbit skin blankets, bone awls, bows and arrows, arrowshaft straighteners, fire drills, stone pipes, musical instruments, feathered costumes, mats, bags, storage pouches, cordage, and nets.

The clan was the largest autonomous landholding and political unit. No pan-tribal union between clans existed. Clans were aligned through economic, marital, and ceremonial reciprocity. Serrano clans often were allied with Cahuilla clans and Chemehuevi groups. The core of a clan was the linage. A lineage included all men recognizing descent from a common ancestor, their wives, and their descendants. Serrano lineages were autonomous and localized, each occupying and using defined, favored territories. A lineage rarely claimed territory at a distance from its home base.

The head of a clan was a ceremonial and religious leader. He also determined where and when people could hunt and gather. Clan leadership was passed down from father to son. The clan leader was assisted by a hereditary ceremonial official, from a different clan. This official held ceremonial paraphernalia (the sacred bundle), notified people about ceremonies, and handled ceremonial logistics.

Serrano shamans were primarily healers who acquired their powers through dreaming. A shaman cured illness by sucking it out of the sick person and by the administration of herbal medicines. Various phases of an individual's' life cycle were occasions for ceremonies. After a woman gave birth, the mother and baby were "roasted," and a feast held. Differing puberty ceremonies were held for boys (datura ingestion used in a structured ceremonial vision quest) and girls ("pit roasting," ingestion of bitter herbs, dietary restrictions, instruction on how to be good wives). The dead were cremated, and a memorial service was held. During the annual seven-day mourning ceremony, the sacred bundle was displayed, the eagle-killing ceremony took place, a naming ceremony for all those born during the preceding year was held, images were made and burned of those who had died in the previous year, and the eagle dance was performed.

The Chemehuevi

The Chemehuevi spoke a language belonging to the Southern Group of the Numic subfamily of the Uto-Aztecan family (Bean and Toenjes 2010). Many traits characterizing Chemehuevi culture are very similar or identical to those of the Mohave, discussed below. Several probable Quechan traits also were noted for the Chemehuevi. For the territory traditionally claimed by the Chemehuevi, the Colorado River formed the eastern boundary south to the Palo Verde Mountains. The boundary then ran northwest, passing east of the Ironwood Mountains, crossing the

Maria Mountains, paralleling the Iron Mountains, and then running between Old Woman Mountain and Cadiz Dry Lake. Mohave territory lay to the northeast, and that of the Las Vegas group of Southern Paiute to the north-northwest.

The Chemehuevi lacked any form of overall "tribal" organization. Anthropologists refer to territorial subdivisions among the Chemehuevi as "bands." Each band was composed of a small number of camps/communities/villages. Bands most likely correspond to economic clusters. Each group was a geographic unit, associated with a definite territory. In general, each band was economically self-sufficient.

In general, Chemehuevi settlement was mobile and scattered, with residence recurring within a fixed area. Houses were closely grouped. Their occupants usually were related by blood or marriage. Settlement size ranged from 1 to 2 households to 10 to 20. Springs often were inherited private property. Married siblings often camped at the same spring.

The Chemehuevi traveled widely. They had amicable contact with the Serrano, Cahuilla, Quechan/Yumans, and other Native American groups. The Chemehuevi sometimes joined with the Mohave/Quechan to fight the Cocopa/Halchidhoma. The Chemehuevi often crossed the Colorado River and hunted deer in Quechan, Yavapai, and Western Walapai territory. They also traded, intermarried, and competed in games with the Yavapai. To the west, the Chemehuevi hunted in the Tehachapi area and went to the Pacific Coast along the Santa Barbara Channel to get abalone shell. Sometimes, a party of 8 to 10 Chemehuevi men joined men from neighboring groups to make a two-month journey to the Hopi villages (in what is now New Mexico) to trade.

The Chemehuevi apparently did not eat fish, but bighorn sheep, deer, pronghorn antelope, and desert tortoise were among the animal food resources they used. Plant foods in this region included pinyon nuts and mescal. Men inherited rights to hunt large game within certain tracts, defined in songs using geographic references. Women gathered a great variety of plant foods, which were more important in the Chemehuevi diet than game. In addition to pinyon nuts and mescal, agave and seeds were staples. Along the Colorado River, the Chemehuevi practiced floodplain agriculture. They grew corn, squash, gourds, beans, sunflowers, amaranth, winter wheat, grasses, and devil's claw using techniques similar to Mohave agricultural practices (see below).

Chemehuevi winter houses were conical/subconical structures. They also built earth-covered houses without a front wall, similar to those constructed by the Mohave. During the summer, many Chemehuevi lived outside, often building and occupying ramadas and windbreaks.

With respect to material culture, Chemehuevi baskets and cradles were made from plant fibers. Plant fibers also provided materials for rope, string, and cordage nets. Pottery, which followed Mohave patterns and styles, included cooking pots, water jars, seed germination and storage pots, spoons/scoops, and large pots for ferrying children across the Colorado River. Watercraft included log rafts and reed balsas. Clothing consisted of double skin or fiber aprons and sandals for men and women. The Chemehuevi commonly had pierced ears and wore body paint.

Monogamy was the commonest form of marriage among the Chemehuevi, but some men had more than one wife. Women gave birth in a special enclosure, followed by a 30-day period of seclusion for mother, father, and child. Puberty rites for boys and girls were held, with the former

focused on acquisition of hunting skills. Cremation of the dead was traditional, replaced by in-ground burial in the historic period.

In general, no central political control existed. Territorial boundaries were not rigid, and some bands were named, while others were not. The basic social and economic unit was the nuclear family and could include other close kin. Groups of individual households moved together on hunting and gathering trips, returning to the same spring or agricultural site. Most large bands had a headman whose leadership was more advisory than authoritative. He was usually succeeded by his eldest son.

The principal role of Chemehuevi shamans was curing illness. They acquired their healing powers through dreams rather than through the use of datura or a trance. Chemehuevi families held a mourning ceremony ("cry"), with which several speeches and songs were associated, within the year after the death of a relative. The "cry" was sponsored by the family and included the ceremonial burning of material goods.

The Chemehuevi had deer and mountain sheep song-dances, held for entertainment and hunting success. The Chemehuevi had other songs, as well: bird, salt, quail, and funeral songs. During winter evenings, men narrated a rich body of traditional stories and myths. These performances often included mimicry, song, and audience participation. Oral tradition related people to social norms, their territories, and to the subsistence resources present within them.

The Mohave

Information regarding the traditional lifeways of the Mohave has mainly been drawn from the accounts of early explorers and/or fur trappers who were among the first to encounter native groups, as well as from the later ethnographic accounts of anthropologists, usually well after the influences of Euro-American contact had begun to alter traditional ways of life. The following summary derives mainly from Kroeber (1925).

The name Mohave is a variation on the name Hamakhava, which is what the tribal people called themselves. The Mohave language is classified into the Yuman subfamily of the Hokan language family. The Mohave were the northernmost and largest tribe of the River and Delta Yumans, who comprised a series of agricultural tribes that occupied the lower Colorado and Gila Rivers. The traditional ethnographic territory attributed to the Mohave includes the Mojave, Chemehuevi, and Colorado River Valleys along the lower Colorado River at the intersection of the borders of Arizona, Nevada, and California. In pre-contact times, Mohave tribal settlement is reported to have centered in the Mohave Valley where their population densities were observed to be the greatest.

The Colorado River served as something of an oasis in the otherwise harsh, dry environment that surrounded the river valleys. The spring overflow of the river, which spread gently over the bottomlands, left behind a rich silt deposit in its recession. It is within these bottomlands that the Mohave cultivated crops, which served as the foundation of their subsistence economy. Their agricultural methods were relatively simple, consisting of planting seeds on the richly silted floodplains and allowing their crops to mature with a minimum of maintenance or effort. Corn was the primary crop, but several varieties of tepary beans, pumpkins, melons, and other plants were also grown. Once harvested, the portions of the harvest that were not immediately consumed were dried in the sun and stored in large basketry granaries. The Mohave supplemented their

diet mainly by gathering wild plants and by fishing, which served as their principal source of flesh non-plant food. Hunting played a minor role in the Mohave subsistence economy.

Technology of the Mohave was relatively simple, and tools were reported to have been crafted to meet only the minimum requirements of utility. According to Kroeber (1925, p. 736), the farming implements consisted of only two items: a heavy wooden staff or digging stick for planting and a spatulate wooden hoe-like implement, whose square edge was pushed flat over the ground to control weeds. Metates, consisting of a rectangular block of stone, were used for grinding corn, wheat, and beans, and both stone and wooden pestles, as well as stone mortars, were also used for food processing (Kroeber 1925, pp. 736–737). Fish were commonly taken with seines, large basketry scoops, sieves, dip nets, and weirs. The bow and arrow and cactus-spine fish hooks were also used for fishing. Mojave basketry was crudely woven, and their pottery was basic and utilitarian. Since hunting was of relatively little significance to the Mohave, hunting devices and techniques were not well developed, consisting mainly of snares, nets, bow and arrow, or curved throwing sticks.

Mohave political and social organization was very informal, and no one individual or group had significant authority over another. Despite the Mohave's loose division into bands or local groups that were spread out over great distances, their cohesion as a tribe was very strong, and they considered themselves as one people occupying a nation with a well-defined territory.

The nuclear family was the basic unit of economic and social cooperation, although the extended family constituted the core of a settlement. Rather than large centralized villages, Mohave settlements were widely distributed along the riverbanks in close proximity to arable lands. Houses were situated on low rises above the floodplain and often separated by as much as a mile or two. During most of the year, the Mohave slept under ramadas; however, during the colder season, they occupied more substantial, semi-subterranean, rectangular earth-covered houses.

Warfare was a dominant strain in River Yuman culture, and the Mohave's strong tribal unity served them well in times of warfare. They apparently traveled great distances to do battle, and their principal weapons were bows and arrows and hard wood clubs. According to Kroeber (1925, p. 727), their main motivation was sheer curiosity, as they liked to see other lands and were eager to know the manners of other peoples, but were not heavily interested in trade.

The Mohave were culturally similar to the other River and Delta Yumans: the Quechan, Halichidhoma, Maricopa, and Cocopa. During ethnographic times, the Quechan were considered friends and allies of the Mohave, while the Halchidhoma, Maricopa, and Cocopa were considered to be enemies with whom the Mohave engaged in warfare. The Mohave were also friendly with the Upland Yuman tribes of the Yavapai and Walapai of western Arizona, although relations with the Walapai were somewhat mixed. One of the most important rituals observed by the Mohave centered on death, namely the funeral and subsequent commemorative mourning ceremony. As soon as possible after death, the deceased was cremated upon a funeral pyre along with all of his or her possessions. The house and granary of the deceased were also burned. It was believed that by burning, these things would be transmitted to the land of the dead along with the soul of the deceased.

Due to their relatively remote location inland, the Mohave maintained their independence throughout the Spanish period of the sixteenth and seventeenth centuries and were only rarely visited by explorers during that time. The few Spanish accounts of encounters with the Mohave

provided similar descriptions of Mohave lifeways as those reported later by ethnographers. It is believed that the ancestors of the Mojave resided in the area for at least 1,000 years and the mode of life in prehistoric times is thought to be similar to that observed historically.

The Quechan/Yuma

The following summary of the Quechan or Yuma is derived mainly from Bee (1983) and Kroeber (1925).

Quechan is a variation on the names Kwichyan or Kuchiana, which are the names the tribe called themselves, but this group is also commonly known as the Yuma. The Quechan are among the Yuman-speaking tribes who occupied the lower Colorado River where it forms the boundary between California and Arizona. According to Kroeber (1925, p. 782), the Quechan and their neighbors to the north, the Mohave, appear to be virtually identical in terms of their agriculture, manufactures, clothing, hair styles, houses, warfare, and sense of tribal unity.

The ethnographic territory traditionally associated with the Quechan, now divided between the states of California and Arizona, is centered around the confluence of the Colorado and the Gila Rivers, extending several miles north and south along the Colorado and east along the Gila. Quechan legend tells of a southward migration of their ancestors from a sacred mountain; however, it is not known when the ancestors of the Quechan first settled near the confluence (Bee 1983, p. 86). No group of this name was mentioned in the account of Hernando de Alarcón when he passed through the area during an expedition in 1540, and the first reference to this group did not appear in Spanish documents until the late seventeenth century, at which time they were settled around the river confluence area (Bee 1983, p. 86).

In an environment otherwise surrounded by dry desert terrain, the subsistence economy of the Quechan focused on riverine agriculture, which was one of the main sources of food for the tribe. Crops were cultivated in the richly silted river bottomlands following the recession of the spring floods and provided a relatively high yield in exchange for relatively low labor output (Bee 1983, pp. 86–87). The main cultivated crops included corn, tepary beans, pumpkins, and gourds. In post-contact times, watermelons, black-eyed peas, muskmelons, and wheat were introduced by Europeans and brought into cultivation by the Quechan, as well. The Quechan also relied on the gathering of wild foods, the most important of which were mesquite and screw-bean pods, although a variety of other wild plants were also collected (Bee 1983, p. 87). Fishing was of minor importance, as there were few species in the lower Colorado River suitable for eating. Among the fish sought were the humpback, white salmon, and boneytail, which were sometimes caught with unfeathered arrows or cactus-spine hooks, but more often taken with traps and nets during floods. Given the low incidence of game available in the area, hunting played a minor role in the overall subsistence economy (Bee 1983, p. 86).

Like the Mohave, Quechan tribal settlements, or rancherias, consisted of extended family groups that were widely dispersed along the riverbanks. Settlements shifted throughout the year, dispersing into smaller groups along the bottomlands during the spring and summer farming seasons and reconvening into larger groups on higher ground, away from the river, during the winter and spring flood periods (Bee 1983, pp. 87–88). The geographic dispersion of the households within the rancheria groups was closely correlated with the condition of the rivers and the technology of riverine agriculture (Bee 1983, p. 89). The warm climate and scant precipitation made substantial housing unnecessary for most of the year, so most people made use of

ramadas or dome-shaped arrowweed shelters. Each rancheria typically had one or two large, earth-covered shelters for the rancheria leaders' families, but these shelters also accommodated small crowds during colder weather.

Much like the Mohave, Quechan technology lacked technical or decorative elaboration beyond the demands of minimal utility (Bee 1983, p. 89). Quechan bows did not feature "backed" construction and so lacked power, and their arrows were frequently untipped, so the bow and arrow's range was short and the penetrating power weak. Sharpened staffs served as digging sticks or, when cut in longer lengths, as weapons (Bee 1983, p. 89).

In terms of property, there were no marked gradations in wealth, and social pressure favored the sharing of one's abundance with others who were less fortunate. Land ownership was informal, and people did not show much interest in the accumulation of material goods beyond the immediate needs of the family group or the surplus maintained by local leaders for redistribution to needy families within their rancheria (Bee 1983, p. 89). Lands were not inherited by family members upon the death of an individual; rather, the lands of the deceased were abandoned, and replacement plots were sought by the family members.

Despite the wide distribution of settlements, the Quechan had a strong sense of tribal unity. As with their neighbors and allies, the Mohave, warfare played a major role in Quechan culture, and it was during times of warfare that tribal unity was most prevalent among the individual settlements (Bee 1983, p. 92). Their major enemies were the Cocopa and the Maricopa, and they often allied themselves with the Mohave in strikes against common enemies (Bee 1983, p. 93). Bee (1983, p. 93) suggests that warfare among the riverine peoples may have increased in scale and intensity during the eighteenth and early nineteenth centuries due to new economic incentives, such as the opportunity to trade captives to the Spaniards or to other tribes for horses or goods.

Quechan social and political organization, like that of the Mohave, appears to have been very informal, with no one individual or group having significant authority over others. Two types of tribal leadership have been reported for the Quechan, one for civil affairs and the other for war, but it is questionable how influential these leadership roles may have been. Each rancheria had one or more headmen, but their authority was contingent upon public support and continued demonstration of competence. According to Bee (1983, p. 92), important matters at either the tribal or the rancheria level were always decided by consensus, sometimes after long debates dominated by the better and more forceful speaker.

Another important aspect of Quechan society that was shared with the Mohave concerns the commemoration of the dead, which was an elaborate ceremony involving wailing and the destruction of property and ritual paraphernalia. All possessions of the deceased, including the family home, were destroyed or given away (Bee 1983, pp. 89, 93–94).

The Maricopa and the Halchidhoma

Ethnographic information for the Maricopa and Halchidhoma is meager in comparison to the Mohave and the Quechan. The following brief summary is derived from Harwell and Kelly (1983).

The Halchidhoma first entered written history in the early seventeenth century with the account of Juan de Oñate, who encountered the "Alebdoma" or "Halchedoma" during a Spanish expedition on the lower Colorado River, below its junction with the Gila River. When later encoun-

tered by missionary-explorer Eusebio Francisco Kino in the early eighteenth century, the Halchidhoma (or "Alchedoma," as they were referred to by Kino) had moved farther north up the Colorado beyond the Gila. The traditional territory attributed to the Halchidhoma lay along the lower Colorado between the Mohave and the Quechan territories. They were later driven from that area under pressure from their hostile Mohave and Quechan neighbors and moved to the middle Gila River area, where some merged with the Maricopa.

The term Maricopa refers to the Yuman-speaking groups who in the early nineteenth century occupied the area along or near the Gila River and its tributaries (in what is now southern Arizona), but who earlier had occupied the lower Colorado River area. The Maricopa language is closely related to Quechan and Mohave, all three of which are classified as members of the River branch of the Yuman language family (Harwell and Kelly 1983, p. 71). The Maricopa call themselves pi•pa•s, "the people." The name Maricopa is an English abbreviation of the name Cocomaricopa, first used by Eusebio Kino in the late seventeenth century (Harwell and Kelly 1983, p. 83).

The Maricopa, who by the early nineteenth century included remnant tribes of the Halyikwamai, Kahwan, Halchidhoma, and Kavelchadom, share common origins and are culturally similar to both the Quechan and the Mohave, the most prominent traits of which included floodwater agriculture and cremation of the dead. Their material culture was also essentially the same (Harwell and Kelly 1983, p. 71). The Colorado River Maricopa lived in low, rectangular, earth-covered houses, but the Maricopa of the Gila River had adopted the round houses of their Piman neighbors. Technology was of little interest to the River Yumans and remained at a low level of development.

Recent Ethnography

The most recent ethnographic research in the DHSP vicinity is currently being conducted by Lowell Bean, Jim Toenjes and Ginger Ridgeway as part of cumulative impact mitigation efforts associated with the Blythe Solar Power Project, Genesis Solar Energy Project, and Palen Solar Power Project (Bean and Toenjes 2010). Their research explores the connection between physical trails located in project vicinity, place names recorded in traditional Chemehuevi and Mohave songs, current use of the project area, and recommendations for mitigation of impacts to resources in the area. Historically, ownership of territory was established and recorded in songs that belonged to specific individuals; song named the places the singers owned. Dr. Bean and his associates have been collecting data and geographic information from Chemehuevi song trails, Mohave dream trails and other place names from published sources, unpublished manuscripts, archival data, and field notes. The places are being identified with digital mapping software and entered into an Access database sortable by place name, tribe, and traveled route. They have also been conducting interviews of native peoples to traditional sites, current uses of the desert area, hunting, plant gathering, mining, and trail running.

The preliminary results of these interviews and research suggest that traditional religious practice among the peoples whose ancestors occupied and used the project vicinity survives principally in mortuary rites. At such rites, traditional songs that describe journeys and treks that took place in "creation time" are sung. These journeys and treks involve places in the project vicinity for both the Chemehuevi/Paiute and Mohave. When the songs are sung, participants in the rites revisualize the places that are mentioned, and this recreation of the sacred past, respondents explained, involves a memory of what they have actually seen when they have traveled through the desert.

Some of the sacred places are mountains; some are stands of plants like pinyons that they, like people in the sacred past, harvest with due ritual; some are the habitats of animals like mountain sheep that have religious significance for Native Americans; and some are places that may be marked by petroglyphs or rock features. Some respondents purposely make trips into the project vicinity to seek religious power. Whether they do so or not, they indicate that the destruction to the landscape, both physical and visual, by the planned construction projects, is an unmitigable offense to the sacredness and spirituality of the landscape. For many, it presents a denial of the opportunity to engage in traditional religious activities. Many Native Americans interviewed felt that the only appropriate mitigation would be to not proceed with the projects.

In the event that this is not feasible, the following recommendations are made:

1. Native Americans from groups most concerned should be present during construction to advise with respect to mitigation of impacts on surface and subsurface cultural resources.

2. Whenever possible, Native Americans should be employed on the project, not only during the construction phase, but also for ongoing operational tasks, particularly monitoring of archaeological fieldwork and construction.

3. When impact to plant or animal communities of concern to Native Americans cannot be avoided by moving the lines, consideration should be given to transplantation, especially if the species are endangered or rare.

4. Places that are eligible for the National Register on the basis of ethnographic and/or historic sensitivity should be avoided or protected. If avoidance is impossible, a plan for the protection of the resource should be developed with Native American participation.

5. Sites that have a high sensitivity rating because they have religious or spiritual value to Native Americans should be avoided or protected to the extent that a site with religious or spiritual value to any other group would be avoided or protected. The Native American Religious Freedom Act of 1978, P.L. 95-341 (Federal Agencies' Task Force 1979) reaffirms that Native Americans have the same rights to religious freedom as other Americans.

6. If Native American burial or cremation sites cannot be avoided and are in danger of negative impact, Native Americans should be consulted about appropriate action, including recovery and disposition of remains.

7. An effort should be made to curate artifacts collected from the Study Area in a facility approved by Native Americans or returned to a location at or near "where they [recovered materials] live," meaning where they were originally collected.

Historic Context

The DHSP is located in an area that has historically been and remains remote from centers of development and settlement. The primary themes in this discussion focus on Spanish and Mexican routes through the desert, and early American traffic, mining, transportation, military training, power transmission, and agriculture/ranching. The following discussion is based primarily on Bischoff (2000), Bischoff et al. (2010), and Von Till Warren (1981).

Spanish and Mexican Routes through the Desert

Sixteenth-century maritime Spanish explorer, Hernando de Alarcon, made the first in-roads into the region in 1540, ascending 85 miles up the Colorado River to the head of navigation near present-day Yuma. Alarcon was sent to supply Coronado's land expedition that had set out on foot from Compostela, Mexico, in search of the fabled seven cities of gold. He eventually cached the supplies and departed after waiting many days. Melchior Diaz, leading a small contingent of Coronado's land unit, later arrived and recovered the supplies. Both Alarcon and Diaz reported the bleak nature of the country. The interior of the Colorado Desert was not explored further until 1702 when Father Eusebio Francisco Kino, a Jesuit missionary, situated in Sonora, began seeking an overland route to coastal California (Von Till Warren 1980, pp. 83–88).

Nearly seventy years later, Francisco Garcés (a Franciscan Padre) also seeking a route to the coast, forded the Colorado River at the mouth of the Gila River, traveling west through the desert before despairing and turning back. His efforts were eventually rewarded in March of 1774, arriving at Mission San Gabriel, accompanying the expedition of Captain Juan Bautista de Anza. Two mission outposts were subsequently established near present-day Yuma in 1779 to minister to the native Quechan and strengthen Spain's hold on this strategic point of entry into California. All passage along this route, later known as the Anza or Yuma Trail, was discontinued in 1781 when the Quechan revolted, killing over thirty missionaries, settlers, and soldiers, including Garcés.

Jose Maria Romero, a Mexican Army captain, explored a second route between 1823 and 1826, along the indigenous Halchidhoma Trail. He had learned of this route a couple of years earlier when a group of Cocomaricopa Indians from Arizona arrived at Mission San Gabriel, having reportedly crossed the Colorado River near present-day Blythe, journeying westward through the Chuckwalla Valley and over the San Gorgonio Pass. On January 6, 1824, Romero was likely in the vicinity of Palen Lake, having made his way up the Salton Wash, between the Orocopias and Chuckwallas. Estudillo, one of the members of the expedition, noted horse paths and footpaths of the Indians, and bones along the trail.

Early American Trans-Desert Crossings

In 1846, during the opening stages of the Mexican-American war, General Stephen Watts Kearny led an advance column of the United States Army into the region. From Santa Fe, Kearny's troops entered California by way of Yuma, reaching San Diego in December, having abandoned their wagons shortly after crossing the Rio Grande. The war ended in 1848 with the signing of the Treaty of Guadalupe Hidalgo (Lamb n.d.).

Only days after the Mexican-American War ended, gold was discovered, kicking off the California Rush of 1849. It is estimated that more than 100,000 travelers passed by way of the Yuma Crossing. The presence of so many travelers along the route had a definite impact on the desert. Whereas previous expeditions made the journey in isolation, during the Gold Rush, trails became relative highways. Companies of miners frequently encountered one another or ran across the remains of recently vacated campsites. The desert floor also became littered with articles abandoned when they either fell apart or proved too heavy or cumbersome for their weary owners. Broken wagons, furniture, articles of clothing, tools and even weapons left by the side of the road proved to be a bonanza for scavengers.

After 1851, travel to California along the southern route through the Colorado Desert declined. Horse traders and livestock drovers still used the trail to drive herds from Texas and Mexico to California and the U.S. Army continued to send caravans of provisions from San Diego to its outpost, Fort Yuma, at least until 1852. Emigrants, moving west, however, were more apt to be settling in southern California as farmers or ranchers instead of prospecting for mineral resources.

Desert Land Act, Entrymen, and Homesteading

Anglo-American homesteading and settlement in the Chuckwalla Valley was dependent upon the access to groundwater (Von Till Warren 1981). The first known documented well was that of Hank Brown, mapped as early as 1856, apparently excavated for use by the Department of Interior's General Land Office survey to establish the San Bernardino Base Line and Meridian through the then uncharted area. Washington, the surveyor noted the well was 45 feet deep and provided good water near the present day airfield northeast of Desert Center. Brown reportedly blazed a wagon road for the boundary surveys up Salt Creek Pass between the Orocopia and Chocolate Mountains and on toward present-day Desert Center.

Some twenty years later, Congress, to encourage and promote economic development of the arid public lands of the West, passed the Desert Land Act in 1877. Through this act, individuals could apply for entry onto public lands that could not produce a paying crop without artificial irrigation. After four years demonstrating proof of reclamation and improvements, desert entrymen would gain title to the land.

Brown's offspring, Floyd Brown, was probably one of the earliest participants in the desert land entry program. It does not appear that many others joined him until a quarter century later. In 1908, a subsidiary organization to the Edison Light and Power Company of Los Angeles, the Chuckwalla Land and Power Co., obtained a number of claims on the California side of the Colorado River north of Parker with the intent of building a dam to generate power and irrigate the Chuckwalla Valley, 40 miles to the west. By the following year, practically all the land in the valley was taken, either by purchase, desert claim, or homestead under the encouragement offered by the development company. The Santa Fe Railroad even had plans to build from Palo Verde through the heart of the valley. However, the Department of the Interior, of the opinion that it was a promoter's pipe dream, refused to sanction the scheme.

Four years later, the California Conservation Commission reported to the Governor and Legislature that while the power and irrigation project had been abandoned by the Chuckwalla Development Company, a group of 410 desert entrymen had formed the Chuckwalla Valley and Palo Verde Mesa Irrigation Association to proceed with the project independently. Most of these men were facing forfeiture of their lands and a loss on their investments, not being able to show final proof of securing water. The Senate and House Committees on Public Lands, recognizing their hardship, passed legislation granting them an extension (an exemption from cancellation for a period of one year) to give them time to carry out their plans. The Chuckwalla relief act benefited 780 entrymen, nearly 100 of whom were situated within the DHSP vicinity.

In 1909, at the start of the land rush, Brown's well was reportedly 300 feet deep, and plainly visible from the road, with two adobe buildings and a corral near it. A couple of years later, a man named Peter S. Gruendike settled in the valley. Gruendike's well is in the same general vicinity of Brown's and may be one-and-the-same. Gruendike was an active entryman, publish-

ing an account of his Mountain View Experimental Ranch in Out West in 1911. By then, he had a good 10-foot-tall windmill in working order and a large tank, along with many kinds of trees planted and 300 or more palms of different kinds. At the time, he was very enthusiastic regarding the future outlook, having visions of growing hay, grain, melons, grapes, dates, cotton, and all citrus fruits. His land was patented in 1916.

Stephen Ragsdale, a cotton farmer from Palo Verde Mesa, acquired Gruendike's property in 1915 and began operating a towing business at the establishment. Six years later, when Route 60 opened a mile or so to the north, he uprooted and founded the tiny settlement of Desert Center, midway between Indio and Blythe.

Roads and Highways Across the Chuckwalla Valley

Automobiles began seriously replacing buckboards (four-wheeled wagons drawn by a horses or mules) about 1910 (Von Till Warren 1980). Because of bad roads, the high-centered Model-T became the vehicle of choice. At that time, no maps, road signs, or service stations existed. Venturesome motorists in Southern California, faced with these circumstances, banded together in 1900 to form a touring club and began publishing a monthly magazine with tips on travel and directions to popular destinations. As desert driving could be perilous, motorists began advocating for better information and road assistance. In 1917, the U.S. Geological Survey erected signs directing travelers to water at 167 localities in California's desert. The California Department of Engineering, after paving its first auto road in 1912, began issuing maps in 1918.

In 1915, the Chuckwalla Valley Road, the east-west route across the valley, was essentially ninety miles of blow sand and cross washes with a couple of ruts. This route began as a single-track wagon road known as Brown's Road, and eventually developed into a paved two-lane automobile road known as U.S. Highway 60. It evolved progressively from the 1850s to the 1930s, and while its exact alignment changed slightly through time, it followed the same general path across the desert landscape in the vicinity of the town of Desert Center. Water wells along the route were developed to satisfy the needs of early travelers, and their importance continued through the automobile age. The town of Desert Center developed as a commercial enterprise along the route in the 1920s at the height of transnational highway development and popularity of scenic and historic tourist routes. Improvements for a safer and more drivable highway occurred in conjunction with the popularity of the southern desert regions in the 1920s and 1930s and the establishment of a series of numbered interstate highways that linked southern California with the rest of the country. U.S. Highways 66, 80, 91, 99, and 101 were established by 1926, connecting southern California to Chicago, Savannah, Montana, Canada, Mexico, and points east. U.S. 60, established by 1933, was one of the earliest transcontinental highways into southern California, linking Los Angeles to Norfolk, Virginia. U.S. Highway 60 would lend itself to the (not always) successful development of towns established along its route across southern California's Colorado Desert. The most prominent and long-lived of these "highway towns" was Desert Center. In 1968, this highway became Interstate 10 (I-10), a major transportation corridor through the Chuckwalla Valley today, connecting Los Angeles and Phoenix.

The predecessor of today's Rice Road (State Route 177) and the eastern portion of State Route 62 had been constructed and paved between Desert Center and Parker, Arizona by 1936. For several years this route was simply known as the Aqueduct Road, or Parker Dam Highway, and was built in support of the construction of the Colorado River Aqueduct in the 1930s. The CRA and the Aqueduct's power transmission line parallels this road for much of its distance, although

the Aqueduct itself is located some distance away. Camp Rice was established along this route a short distance to the east of the town of Rice in the spring of 1942 as one of General George S. Patton's 12 divisional camps of the Desert Training Center. The camp was situated along the south side of the road and immediately east of the Rice Army Air Field. Camp Coxcomb, Camp Iron Mountain, and Camp Granite were also established along this road during the period, 1942–1944. The highway provided access between these divisional camps during that time (Smallwood et al. 2012).

The Development of Desert Center

Today's town of Desert Center is situated along a segment of former U.S. Highway 60/70 (Ragsdale Road) near the intersection of Rice Road (State Route 177), and north of the Interstate 10 freeway. The town was a prominent "highway" town established by Steven Ragsdale in 1921. The café and service station were the center of his highway enterprise, but over time additional related buildings included the Ragsdale home, a store, an automotive garage, cabins with motel service, a school, and a post office. Development of the town was the result growth and construction fueled by an increase in tourism, a general interest in the desert by city-dwellers, and construction activity in the region associated with the highway, the Colorado River Aqueduct, mining, and the Desert Training Center/California-Arizona Maneuver Area (DTC/C-AMA).

Colorado River Aqueduct

The Colorado River Aqueduct (CRA) is a water conveyance system operated by the Metropolitan Water District of Southern California. Construction began in 1933 and water first flowed through the system in 1941. The CRA system carries Colorado River water, impounded at Lake Havasu on the California-Arizona border, through, over, and across mountains and desert to the coastal and inland valleys of southern California. The CRA stretches 242 miles from Parker Dam to Lake Mathews (formerly known as Cajalco Reservoir). Water from Lake Mathews was then distributed to local water districts in the Los Angeles Basin and lower Santa Ana River drainage. The system is composed of two reservoirs, five pumping plants, 63 miles of canals, 92 miles of tunnels, and 84 miles of buried conduit and siphons. The nearest of these pump stations is the Eagle Mountain Pump Lift, located 7 mi north of Desert Center.

The project involved ingenious engineering solutions and newly introduced equipment at the time of its construction. It also employed over 35,000 people during an eight-year span of construction, and as many as 10,000 people at one time, making it southern California's single largest work opportunity during the Great Depression (Gruen 1998). Due to its many engineering merits, the CRA has been named a National Historic Civil Engineering Landmark by the American Society of Civil Engineers. Today, it is one of the principal water supplies for southern California.

In building the CRA, Metropolitan chose an aqueduct route that required four pump lift stations. A fifth was added when the Granite Mountains tunnel could not be easily holed-through. Each station was built with three pumps and the capability for expansion to nine pumps (Gruen 1998). Large amounts of electricity were required to operate the pumps, which necessitated construction of the transmission lines from Hoover Dam to the pump stations.

Construction of the transmission lines to power the system began in 1934 with the grading of dirt roads to provide access to the tower locations. The line is constructed of single H-frame steel

towers with cross supports. The contractor for construction of the transmission lines was Fritz Ziebarth of Long Beach. He established a construction camp at Camino where the steel towers were assembled using steel made in San Francisco. The steel was sent by rail to Goffs on the Santa Fe Railroad line and then by truck to CamiNo. Reinforced concrete footings were poured at each tower location and then the towers were erected on the footings. Erection of the towers began in February 1936 and the line from Hoover Dam to Iron Mountain Pump Lift was completed by the end of 1936. Construction of the line from Iron Mountain Pump Lift to Hayfield Pump Lift was completed in July, 1937 (Gruen 1998).

Hydroelectric Power Transmission

During the late nineteenth century, history was made generating and transmitting electricity in Southern California's Inland Empire (Taylor 2005). Pioneer engineers and entrepreneurs took the industry's first steps toward large capacity power plants and long distance power transmission nearly 125 years ago. Charles R. Lloyd and Gustavus Olivio Newman built California's first hydroelectric power plant in western Riverside County in 1887. It relied upon water from a canal in Highgrove at the base of a 50-foot elevation drop. It began by powering 30 outdoor arc lights (15 in Colton and 15 in Riverside) from a direct current dynamo.

In the early 1890s, direct current (DC) relied upon a distributed system involving many power plants and numerous short transmission lines because it was not practical to vary the voltage to meet differing consumer requirements for lighting and motorized appliances. Further, DC systems were inefficient because low-voltage transmission necessitated conveyance of high-currents through resistive conducting wires resulting in large energy losses. In contrast, alternating current (AC) relied upon a centralized system involving fewer power plants, long-distance transmission lines, and transformers to step down the voltage, essentially enabling the conveyance of high-voltages at low-currents, thereby reducing resistance and energy loss.

In September of 1893, while the dominant electric companies were fighting over the emerging electric power standards (DC versus AC), the small community of Redlands, in San Bernardino County, managed to engineer and complete the first commercially viable power plant in the United States. With the foresight of Almarian Decker, long-distance electric power transmission was achieved via transformers and the development of a revolutionary three-phase AC generator. Decker's power generation and delivery system was so successful that it became the Southern California standard.

Hydroelectricity, referred to as "white coal," was a clean and inexpensive source of power that enabled industrial capitalism to take hold in the West. Engineers began to dam western rivers for electricity in the 1890s, just as the hydraulic mining industry declined. Citizens, politicians, and reformers viewed electricity as a necessity that would dramatically uplift the country's standard of living. Water and power companies like Edison Light and Power Company of Los Angeles (later known as Southern California Edison), seeing big money, made every effort to control the stakes.

Before 1913, the highest voltage lines in the Los Angeles area were operated in the 10 to 75 kV range. Some of the earliest distribution lines were built to serve rural communities. During the 1930s, any circuits built were those that extended lines constructed a decade earlier. Many of these lines focused on following railroad spur lines and existing distribution lines to growing communities.

The first electricity came to Blythe in 1917. Two 50 watt diesel engines generated power 18 hours a day. It was not until 1930 that this system was abandoned when a 70 mile-long transmission line was constructed connecting Blythe with Calipatria in the Imperial Valley, where the line's main system was located. In the 1950s, the Blythe-Eagle transmission line was constructed. It was a 161 kV transmission line that connected the Blythe-Eagle Mountain Substation in Blythe to a substation near Eagle Mountain. The other transmission line in the vicinity of the DHSP is the Devers-Palo Verde- line, a 500 kV lattice-tower transmission line constructed in 1982. It connects a plant in Arizona with a substation near Palm Springs.

Mining

Riverside County is known mostly for its sporadic, small-scale mining of gold, silver, lead, copper, uranium, fluorite, and manganese. Large numbers of prospectors were attracted to the region during the gold boom in La Paz (in western Arizona, 6 miles north of present-day Ehrenberg) in 1862. Not long after, miners began combing the mountains on either side of the Chuckwalla Valley. Gold was being mined as early as 1865 in the Eagle Mountain District. Much later, in the late 1940s, Kaiser Steel began a large-scale iron ore mining operation in the Eagle Mountains. The iron ore deposit was discovered by geologists during the construction of the CRA in the early 1930s, and the mine reached its peak of production during WWII as one of the largest open-pit mines in the world. The Eagle Mountain Mine and the adjacent townsite of Eagle Mountain played a significant role in the war effort during World War II and in the subsequent development of the local area. Eagle Mountain Railroad was constructed between August 1947 and 1948 to haul ore from the Kaiser Steel-owned mine at Eagle Mountain to the Southern Pacific Railroad siding at Ferrum near the northeastern shore of the Salton Sea. It stretched 51 mi from Ferrum to its terminus at Eagle Mountain Mine, and was one of the longest privately built standard gauge railroads in the American southwest during the post-war era. Kaiser Road is a paved road that provided access to Eagle Mountain Mine and the community of Eagle Mountain from Desert Center. Kaiser Road was constructed between 1957 and 1963. Prior to that, vehicle access to Eagle Mountain Mine and the Eagle Mountain community was provided via Eagle Mountain Road. Kaiser Road was constructed by Kaiser Steel to provide access to Eagle Mountain Mine and the community of Eagle Mountain.

In the Granite Mountains to the north-northwest, there was a short stint of gold mining beginning in 1894, followed by a resurgence in the late 1920s by the Chuckwalla Mining and Milling Corporation. Copper mining occurred in the Palen Mountains to the northwest during the second decade of the twentieth century, by the Fluor Spar Group, Homestake Group, Crescent Copper Group, Orphan Boy, and Ophir mines. Most of these mines were abandoned by 1917.

The short-lived Pacific Mining District was established in 1887, in the Chuckwalla Mountains, following gold and silver discoveries that caused the most substantial rush to Riverside County in its history. Sixty claims were filed by the end of the year, but the boom fizzled by 1890 because the owners never had enough capital to work them properly. About 1898, some 40 claims in the area were taken up by the Red Cloud Mining Company. In 1901, a force of 50 men worked there. The company installed a new hoist and a 30 ton mill, and was raising money through stock offerings to construct a tram from the mine to the mill. The company changed hands some time before 1915, however, and soon folded. Just prior to this, half-a-dozen prospectors began working the Chuckwalla Placer Diggings near Chuckwalla Springs. This

lasted about fifteen years. The Red Cloud Mine was later resurrected, in 1931, when a small amalgamation plant was built, and continued operations until 1945.

Military Activities

Desert Training Center. In 1942, during World War II, Gen. George S. Patton established the Desert Training Center/California-Arizona Maneuver Area (DTC/C-AMA) in a sparsely populated region of southeastern California, Arizona, and Nevada. Its purpose was to prepare tank, infantry, and air units for the harsh conditions of North Africa, practicing maneuvers, developing tactics, and field testing equipment. The installation, in operation for two years (until the end of the war), was 16,000 square miles in extent. It was the first simulated theater of operations in the United States. Its location was chosen for its unforgiving desert heat, rugged terrain, available telephone communications system, and accessibility by established railroads and highways (Bischoff 2001; Bischoff et al. 2010).

Seven camps were established for divisional use. Camp Young, near Indio, served as the main headquarters. Camp Desert Center was located between Chiriaco Summit and the community of Desert Center. It encompassed 34,000 acres, consisting of an encampment with temporary housing structures, an evacuation hospital, observers' camp, an ordnance campsite, quartermaster truck site, and maneuver area. The Desert Center Airport, formerly the Desert Center Army Air Field, also known as the Airdrome, was built in 1942 as a sub base to Thermal Army Airfield, and is located approximately three miles southeast of the DHSP. Historical research indicated that a detachment of the 475th Base Headquarters & Air Base Squadron was the first administrative unit stationed at the airfield, arriving on January 15, 1943 (Bischoff 2000:92–93). The airfield was described as having 5,500 feet of runways, taxiways, a parking apron, and more than 40 buildings, 61 including an operations building, power house, Link Trainer building, hangar and supply buildings. The 74th Reconnaissance Group arrived at the airfield in December of 1942 while the base was still under construction and was equipped with O-52s, L-1s, L-4s, B-25s, P-39s, and P-40s. Desert Center Army Airfield opened in April of 1943 and the 3rd Airdrome Detachment was activated on August 1, 1943. After the defeat of Rommel's army in the African desert, the training area was closed in 1944 and the airfield was assigned to the Fourth Air Force, which continued to use the field for training operations for B-24 Liberator crews operating out of March Field, in western Riverside County. In 1946, under the control of the Army Corps of Engineers, many of the buildings at the airfield were declared surplus and auctioned off to the public, and the airfield was eventually closed.

In 1986, BLM planned to nominate each of the seven division camps to the NRHP, to develop an interpretive program for the DTC/C-AMA, and to provide historical resources protection through designation as an Area of Critical Concern (ACEC) (Bischoff 2000, p. 134). Subsequently, Bischoff (2000, p. 133), in considering the historical and archaeological contexts for the DTC/C-AMA, found that it was a historically significant resource under all four criteria of the NRHP. As such, he recommended that the facility be nominated to the NRHP as a discontiguous district of clearly functionally and temporally related resources. He further proposed that the facility be recorded as multiple properties consisting of contributing and noncontributing elements of the district. DTC/C-AMA can be thought of as an interconnected landscape of WWII training sites that are highly significant for their association with Gen. George S. Patton and for their contributions to our understanding of how American soldiers were trained during WWII.

Recently, the DTC/C-AMA has been a focus of a research project as part of cumulative impact mitigation associated with the Blythe Solar Power Project, Genesis Solar Energy Project, and Palen Solar Power Project (Bischoff et al. 2010). As part of this study a context, field manual, and Multiple Property Nomination to the NRHP are being prepared. These documents are intended to standardize the way DTC/C-AMA sites, features, and artifacts are recorded, analyzed, and evaluated for eligibility for listing on the NRHP and CRHR. In addition, research questions specific to WWII era training were developed.

Desert Strike. During the Cold War years, relations between the United States and the Soviet Union were fragile (U.S. Strike Command n.d.). While a campaign promoting the nonproliferation of nuclear weapons began in 1958, a treaty was not signed until 1970. Thus, amid worries of nuclear war, a two-week training exercise was launched in 1964, called Desert Strike. It involved over 100,000 men, 780 aircraft, 1,000 tanks, and 7,000 other vehicles along the banks the Colorado River and adjoining desert valleys ranging over 150,000 square miles of California, Nevada, and Arizona. Four Army divisions, three Army Reserve and National Guard brigades, and fifteen tactical Air Force squadrons took part.

The exercise was a two-sided enactment, with fictitious world powers "Calonia" and "Nezona" sharing a common border at the Colorado River. The premise of the conflict between these two entities, each led by a Joint Task Force, was a dispute over water rights. Major tactical operations during the exercise included deep armored offensive thrusts, defensive operations along natural barriers, counterattacks including airmobile and airborne assaults, and the simulated use of nuclear weapons. The Air Force provided fighter, air defense, interdiction, counter-air reconnaissance, and troop carrier operations in support of both joint task forces.

In the first phase of Desert Strike, Calonia initiated mock battle with a full-scale invasion of Nezona. A new concept for military river crossings was put into operation during this invasion, accomplished with a combination of assault boats, amphibious armored personnel carriers, ferries, bridges, and fords at eight major sites along a 140-mile stretch of the Colorado River. The practice of attack and counterattack continued into a second phase, in which simulated nuclear strikes and airborne assaults were traded between the forces. Heavy equipment, such as the M60 tank, was used during practice maneuvers, and the track marks can still be seen across the desert.

Identified Cultural Resources

Class I Inventory

The Class I overview is a summary of literature, records, and other documents providing an informed basis for understanding the nature of the cultural resources of the study area. The original Class I review only covered the northeastern, 1,052-acre solar field site and a one mile buffer surrounding it (Auck 2010). This search was later expanded to include the southwestern solar field parcel and gen-tie line Alternatives B/C, D, and E (Akyuz 2012a, 2012b). The results of the records search/literature review indicate that 36 cultural resources inventories have been conducted within one mile of the proposed APE, and 353 cultural resources including those for the DSSF have been recorded in this same area.

BLM Class III Survey

BLM Class III cultural resource inventories of about 96% of the DHSP APE have been completed. Portions of Alternative D and Alternative E that are located on privately owned land have not yet been surveyed due to site access restrictions (105.3 acres). Site access restrictions are an allowable reason to forego Class III surveys under both NEPA and CEQA. Inventories of the following project components have been completed:

1. The main project footprint was surveyed by Chambers Group in August of 2011 (Akyuz 2012a);
2. Portions of transmission line Alternative B/C, referred to as Alternative A-1 in DSSF documents, was surveyed by AECOM and ECORP in 2010 (Chandler et al. 2010);
3. Portions of transmission line Alternative D, referred to as Alternative A-2 in DSSF documents, was surveyed by AECOM and ECORP in 2010 in (Chandler et al. 2010);
4. Portions of transmission line Alternative E was surveyed by the Chambers Group in October of 2011 (Akyuz 2012a).
5. Additional recordation and analysis was conducted by Applied Earthworks (Æ) in December of 2011 and April of 2012 (Akyuz 2012b).
6. An historic built-environment and indirect effects survey was conducted by Applied Earthworks (Æ) in April of 2012 (Smallwood et al. 2012).
7. A portion of transmission line Alternative B/C was revisited by ECORP in July 2012 (Chandler 2012).

A total of 62 new archaeological sites were found during these field inventories. These included 7 prehistoric resources, 42 historic-period resources, 2 multicomponent resources, and 11 of unknown temporal affiliation. Five of the sites documented by Chandler (2012) were not located within the APE, and consequently are not reflected in Table 3.6-1. The public is being provided an opportunity to review the results of these surveys and provide comments on the findings during the 30-day public circulation period provided for a Final EIS under NEPA.

Resources Identified within DHSP Components and in the Vicinity

A total of 64 cultural resources (including archaeological sites, built environment resources, and historic districts) are present within the DHSP components, and the immediate vicinity, that have been inventoried to date. These include eight prehistoric resources,43 historic resources, 2 multicomponent resources, and 11 of unknown temporal affiliation. No human remains have been identified as components of these resources. As discussed previously, only adverse effects to resources that BLM has determined are eligible for th NRHP or resources that are unevaluated must be mitigated. It should be noted that Alternative B/C and Alternative D have some overlap. As a result, there are 2 sites which are present in both alternatives (P-33-18299 and P-33-18307). Therefore, the total number of sites documented in, or in proximity to, all alternatives and the solar field, in addition to the indirectly affected sites and historic districts, will be higher than 64 because these 2 sites are *not* counted twice in the total number of cultural resources. All of these resources are located within the boundaries of two large, overlapping proposed historic districts

(Akyuz 2012a, 2012b; Goldberg and McDougall 2012; Chandler et al. 2010). These resources are summarized below.

Resources Associated with all DHSP Components – Historic Districts

All of the project components have been determined to be within the boundaries of two potential historic districts. Historic districts are a grouping of sites, buildings, structures, or objects that are linked historically by function, theme, or physical development or aesthetically by plan.

The BLM and more recently the Energy Commission have proposed the designation of a contiguous historic district that incorporates historical archaeological sites associated with Gen. Patton's World War II Desert Training Center California-Arizona Maneuver Area (DTC/C-AMA). In Energy Commission documents, the proposed district is known as the Desert Training Center Cultural Landscape (DTCCL). Depots, airfields, ranges, bivouacs, maneuver areas, camps, and hospitals are among some of the property types included in the proposed district (Bischoff et al. 2010).

Energy Commission staff have also proposed the designation of a noncontiguous historic district that incorporates prehistoric archaeological sites associated with the Halchidhoma (or Coco-Maricopa) Trail (CA-Riv-0053T). In Energy Commission documents this proposed district is referred to as the Prehistoric Trails Network Cultural Landscape (PTNCL). This proposed district would consist of important destinations in the Colorado Desert within and in the vicinity of the Chuckwalla Valley, California, the network of trails that tie them together, and the features and sites associated with the trails (Laylander and Schaefer 2010). Some potential contributors to the PTNCL in the vicinity of the DHSP include: the Halchidhoma Trail, North Chuckwalla Mountains Petroglyph District and other sites in the Alligator Rock ACEC.

Resources Identified Within Particular DHSP Components

Solar Facility Site. Resources identified on the solar facility site consist primarily of isolated artifacts. These isolates included C-ration cans and soluble coffee cans associated with the WWII-era DTC/C-AMA. These isolated artifacts have been moved through fluvial and wind processes, and thus are no longer in primary context.

One new site, AE-2316-1, and multiple isolates were identified within the solar facility site. The site consists of a prehistoric "pot drop" feature represented by nine sherds of Parker Buff pottery, all from a single vessel. This site has been determined to not be eligible for listing in the National Register of Historic Places (NRHP) (Akyüz 2012b).

Gen-Tie Line Corridors. Alternative B/C – This proposed transmission corridor includes 28 sites (four prehistoric, sixteen historic, two multicomponent, and 6 of unknown temporal affiliation). The majority of these sites were recorded as part of the DSSF project (Chandler et al. 2010, Chandler 2012). Ten of these resources have been formally evaluated by BLM (Chandler et al. 2011; Kalish 2012). The sites and the results of these formal evaluations are listed in Table 3.6-1.

Alternative D – Survey crews could not access 98.3 acres (43.5%) of the proposed Alternative D corridor. For those portions of the corridor which were surveyed, six historic sites were identified. Five of these sites were recorded as part of the DSSP Class III survey. ECORP (Chandler et al. 2011). Two of these resources have been formally evaluated by BLM (Chandler et al.

2011; Kalish 2012). The sites' BLM eligibility determinations are listed in Table 3.6-1, with sites determined eligible listed in bold.

Alternative E – Survey crews could not access 7.04 (2.8%) acres of the proposed Alternative E corridor. During the pedestrian survey for the current project one previously recorded historic road segment and seven new historic sites were identified (Akyüz 2012b). None of these resources have been formally evaluated by BLM. These sites are listed in Table 3.6-1.

Table 3.6-1. Cultural Resources Identified Within the Proposed Solar Facility Site and Portions of Alternatives B, C, D, and E

Within Portion of APE	Primary Number (P-33-)	Trinomial (CA-RIV-)	Description	NRHP Eligibility Recommendations	Land Jurisdiction for Environmental Review
Alternative B/C	15093	NA	Prehistoric 50+ quartz debitage	Determined Not Eligible	BLM
Alternative B/C	**15095**	**9385**	**Historic: hundreds of discrete refuse deposits: 1929-1980s**	**Determined Eligible**	**BLM/County ROW**
Alternative B/C	18244	NA	Historic refuse scatter of four cans	Determined Not Eligible	County ROW
Alternative B/C	18245	9382	Historic refuse scatter: multiple use roadside refuse deposit	Determined Not Eligible	County ROW
Alternative B/C	18246	NA	Historic excavated area; potentially a prospecting area	Determined Not Eligible	County ROW
Alternative B/C	18249	9383	Historic prospect pit and associated push pile	Not evaluated	BLM
Alternative B/C	18253	NA	Historic refuse scatter of over 30 cans	Determined Not Eligible	County ROW
Alternative B/C	18263	9390	Historic refuse scatter of 40 cans	Recommended Not Eligible	BLM
Alternative B/C	18268	NA	Prehistoric lithic concentration	Not evaluated	BLM
Alternative B/C	18269	9394	Prehistoric lithic debris scatter, three lithic and postherds concentrations	Not evaluated	BLM
Alternative B/C	18271		Historic-period refuse deposit: 200+ hole-in-top ilk cans, 200+ sanitary cans	Determined Not Eligible	BLM
Alternative B/C	18291	NA	Historic refuse scatter of 6 cans	Determined Not Eligible	BLM
Alternative B/C	18292	9407	Prehistoric short-term habitation area with two artifact concentra-tions: lithic scatter, potsherds, and fire affected rock	Recommended Not Eligible	BLM
Alternative B/C	18404	9483	Historic refuse deposit	Not evaluated	BLM
Alternative B/C	18405	NA	Historic-period placer mining disturbance, one rock cairn feature, one hole-in-top milk can	Determined Not Eligible	BLM
Alternative B/C	19471	9910	Historic refuse deposit	Not evaluated	BLM
Alternative B/C	18249	9383	Historic prospect pile and associated push pit	Not evaluated	County ROW
Alternative B/C	DH-001	NA	Rock ring	Assumed Eligible	BLM
Alternative B/C	DH-002	NA	Rock ring	Assumed Eligible	BLM
Alternative B/C	DH-006	NA	Four cleared circles	Assumed Eligible	BLM
Alternative B/C	DH-008	NA	Four cleared circles and a backfilled pit	Assumed Eligible	BLM

Table 3.6-1. Cultural Resources Identified Within the Proposed Solar Facility Site and Portions of Alternatives B, C, D, and E

Within Portion of APE	Primary Number (P-33-)	Trinomial (CA-RIV-)	Description	NRHP Eligibility Recommendations	Land Jurisdiction for Environmental Review
Alternative B/C	DH-009	NA	Seven historic and unknown temporal affiliation cleared circles	Assumed Eligible	BLM
Alternative B/C	DH-012	NA	Cleared circle	Assumed Eligible	BLM
Alternative B/C	DH-051	NA	Historic refuse deposit	Recommended Not Eligible	BLM
Alternative B/C	DH-052	NA	Historic refuse deposit and prehistoric quartz reduction locus	Recommended Not Eligible	BLM
Alternative B/C	DH-100	NA	Two cleared circles	Assumed Eligible	BLM
Alternative B/C–Alternative D Overlap	18299	NA	Historic refuse scatter	Determined Not Eligible	BLM
Alternative B/C–Alternative D Overlap	18307	NA	Historic rock feature; one foot tall pile of 50 granitic and quartzite boulders	Not evaluated	BLM
Alternative D	18391	NA	Sparse historic refuse scatter: spent military ordnance	Not evaluated	BLM
Alternative D	18392	NA	Moderately Dense historic scatter associated with DTC 1942-1944	Determined Eligible	BLM
Alternative D	18393	9481	Historic foundation associated with DTC 1942-1944	Not Evaluated	BLM
Alternative D			AE-DH-7H – Historic oiled road	Recommended Not Eligible	BLM
Alternative E	18315	NA	Historic highway markers and associated berm	Not evaluated	BLM
Alternative E			Site 1 – Historic refuse scatter, WWII era	Not evaluated	BLM
Alternative E			Site 2 – Historic low earthen ramp	Not evaluated	BLM
Alternative E			Site 3 – Historic road segment	Not evaluated	BLM
Alternative E			Site 4 – Historic refuse Scatter, modern era	Not evaluated	MWD
Alternative E			Site 5 – Historic refuse scatter 1880-1930	Not evaluated	BLM
Alternative E			AE-DH-1H – Historic refuse scatter	Not evaluated	MWD
Alternative E			AE-DH-5H – Historic refuse scatter associated with DTC 1942-1944	Recommended Not Eligible	MWD
Solar Field			Æ-2316-1 – Prehistoric pot drop	Recommended Not Eligible	BLM

Resources Identified in the Vicinity of DHSP Components

A total of 20 cultural resources are present in the vicinity of DHSP components and may be subject to indirect effects. These include the North Chuckwalla Petroglyph District (CA-RIV-1383, NRHP-listed), the North Chuckwalla Mountains Quarry District (CA-RIV-1814, NRHP-listed), segments of the Coco-Maricopa Trail (CA-RIV-053T), and 17 historic period built-environment resources (Smallwood et al. 2012). All of these resources have been formally evaluated by BLM (Kalish 2012). These resources are summarized below (Table 3.6-2).

Table 3.6-2. Cultural Resources Present in the Vicinity of DHSP Subject to Indirect Effects

Primary Number (P-33-)	Trinomial (CA-RIV-)	Description	NRHP Eligibility Recommendations
017766		Former U.S. Highway 60/70	Eligible
005717		Desert Center Café and associated buildings and structures	Eligible
005718		Desert Center post office, country store, and church	Not eligible
005719		Two stump ranch shanties and an outhouse in Desert Center	Not eligible
005721		Eight apartment buildings ("Hollywood Cabins") in Desert Center	Not eligible
006832		Ragsdale House in Desert Center	Eligible
006833		Old School House/Desert Center School	Not eligible
		New Desert Center School	Not eligible
		State Route 177 (Rice Road)	Not eligible
		CRA Transmission Lines	Contributing to eligibility of a potential CRA district
		Eagle Mountain Pumping Plant	Contributing to eligibility of a potential CRA district
		DTC/C-AMA	Eligible
		Desert Center Army Airfield/Airport	Not eligible
		Eagle Mountain Railroad	Eligible
		Kaiser Road	Not eligible
		Blythe-Eagle Mountain Transmission Line	Not eligible
013987		Southern California Telegraph Company Pole Line	Not eligible
	053T	Segments of Coco-Maricopa Trail	Eligible
	1383	North Chuckwalla Mountains Petroglyph District	Listed
	1814	North Chuckwalla Mountains Quarry District	Listed

3.7 PALEONTOLOGY

This section describes the existing paleontological resources and the possibility of discovery of fossil resources within in the area where the Proposed Action and alternatives would be implemented. The project study area for paleontology encompasses all resources that could be affected by ground disturbance related to the construction, operation, and decommissioning of the Desert Harvest Solar Project (DHSP).

Paleontological resources are any fossilized remains, traces, or imprints of organisms that are preserved in the Earth's crust and are of paleontological interest and provide information about the history of life on Earth. Fossil remains may include bones, teeth, shells, leaves, and wood. They are found in geological deposits within which they were originally buried. Paleontological resources include not only the actual fossils, but also the collecting localities and the geological deposits that contain the fossils. Paleontological resources are considered nonrenewable resources because the organisms they represent no longer exist. Thus, once destroyed, these resources can never be replaced.

This section is based on the Potential Fossil Yield Classification Study (Roeder 2011) conducted for the entire DHSP, and two Paleontological Resources Assessments (Roeder 2012a, 2012b) which include the results of field studies of the proposed solar facility site and those portions of gen-tie line Alternative B, C, D, and E that fall on BLM-administered land. In addition, this section relies upon a paleontological assessment conducted by ECORP for the Desert Sunlight Solar Farm (DSSF) project, as incorporated by reference in Section 1.11, that describes fieldwork conducted at the adjacent solar facility site and on portions of gen-tie line Alternatives B and C (Aron and Kelley 2011). Paleontological field assessments of those portions of the gen-tie alternatives which fall on Metropolitan Water District of Southern California (MWDSC) land have not been conducted due to site access constraints; however, land access is being acquired, and, if available, the results of surveys will be incorporated into the Record of Decision. Although this limitation does not allow for a full comparison of effects across alternatives, given the site constraints this circumstance is allowable under NEPA.

3.7.1 Applicable Plans, Policies, and Regulations

Paleontological resources are afforded protection under state and federal environmental laws most notably by the 1906 Federal Antiquities Act, the 2009 Paleontological Resources Preservation Act (PRPA), other subsequent federal legislation and policies, and by the State of California's Environmental Quality Act (CEQA, Section 15064.5). Professional standards for assessment and mitigation of adverse impacts on paleontological remains have been established by the Society of Vertebrate Paleontology (SVP 1995).

Federal

Paleontological Resources Preservation Act of 2009

The PRPA was signed into law as part of the Omnibus Public Lands Management Act (OPLMA) of 2009. The OPLMA-PRP requires the Secretary of the Interior to manage and protect paleontological resources on federal land using scientific principles and expertise, and requires the BLM to develop appropriate plans for inventorying, monitoring, and the scientific and educational use of paleontological resources, in accordance with applicable agency laws, regulations, and policies. Where possible, these plans should emphasize interagency coordination and

collaborative efforts with non-federal partners, the scientific community, and the general public. The OPLMA-PRP is the new authority for the Department of the Interior (DOI) and USDA Forest Service for permits to collect paleontological resources as well as curation of these resources in an approved repository.

Antiquities Act of 1906

The Antiquities Act was the first law enacted to specifically establish that archaeological sites on public lands are important public resources, and it obligated federal agencies that manage public lands to preserve the scientific, commemorative, and cultural values of such sites. This act does not refer to paleontological resources specifically; however, the act does provide for protection of "objects of antiquity" (understood to include paleontological resources) by various federal agencies not covered by the OPLMA-PRP.

Federal Land Policy and Management Act of 1976 as Amended

The Federal Land Policy and Management Act of 1976 requires the Secretary of the Interior to retain and maintain public lands in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric water resource, and archeological values [Section 1701(a)(8)].

Bureau of Land Management Plans and Guidelines

California Desert Conservation Area Plan

With respect to paleontological resources (discussed in the Cultural Resource Element), the CDCA Plan aims to: (1) ensure that paleontological resources are given full consideration in land use planning and management decisions, (2) preserve and protect a representative sample of the full array of the CDCA's paleontological resources, and (3) ensure proper data recovery of significant paleontological resources where adverse impacts cannot be avoided or otherwise mitigated.

BLM Instruction Memorandum (IM) 2008-009 and 2009-011

This BLM memorandum formalizes the use of a new classification system for identifying fossil potential on public lands. The Potential Fossil Yield Classification (PFYC) system is based on the potential for the occurrence of significant paleontological resources in a geologic unit, and the associated risk for impacts to the resource based on federal management actions. Occurrences of paleontological resources are closely tied to the geologic units (i.e., formations, members, or beds) that contain them. Although significant localities may occasionally occur in a geologic unit, a few widely scattered important fossils or localities do not necessarily indicate a higher class; instead, the relative abundance of significant localities is intended to be the major determinant for the class assignment.

Using the PFYC system, geologic units are classified (Class 1 – Very Low through Class 5 – Very High) based on the relative abundance of vertebrate fossils or scientifically significant invertebrate or plant fossils and their sensitivity to adverse impacts, with a higher class number indicating a higher potential. It is used to set management policies and not intended to be applied to specific paleontological localities or small areas within units.

As defined in IM 2009-011, *Assessment and Mitigation of Potential Impacts to Paleontological Resources*, Appendix A, a significant paleontological resource is any resource that is considered to be of scientific interest, including most vertebrate fossil remains and traces, and certain rare or unusual invertebrate and plant fossils. A significant resource is considered to be scientifically important because it is a rare or previously unknown species, it is of high quality and well-preserved, it preserves a previously unknown anatomical or other characteristic, provides new information about the history of life on earth, or has identified educational or recreational value. Paleontological resources that may be considered to not have paleontological significance include those that lack provenience or context, lack physical integrity because of decay or natural erosion, or that are overly redundant or are otherwise not useful for research.

BLM Manuals and Handbooks

BLM Manual 8270 and BLM Handbook H-8270-1 contain the agency's guidance for managing paleontological resources on public land. The manual has more information on the authorities and regulations related to paleontological resources. The handbook gives procedures for permit issuance, requirements for qualified applicants, information on paleontology and planning, and a classification system for potential fossil-bearing geologic formations on public lands. This classification system was superseded by IM-2008-009. The manual and handbook policy and guidance are still in effect until such time the final regulations under the OPLMA-PRP are promulgated and the manual and handbook are updated.

State

California Environmental Quality Act

Paleontologic resources are afforded protection by environmental legislation set forth under CEQA. Appendix G (part V) of the CEQA Guidelines provides guidance relative to significant impacts on paleontological resources, indicating that a project would have a significant impact on paleontological resources if it will disturb or destroy a unique paleontological resource, site, or unique geological feature.

California Public Resources Code

Section 5097.5 specifies that any unauthorized removal of paleontological remains is a misdemeanor.

California Penal Code

Section 622.5 sets the penalties for damage or removal of paleontological resources.

Riverside County

Riverside County General Plan

The following policies outlined in the General Plan provide direction for paleontological resources:

OS 19.8 – Whenever existing information indicates that a site proposed for development may contain biological, paleontological, or other scientific resources, a report shall be filed stating the

extent and potential significance of the resources that may exist within the proposed development and appropriate measures through which the impacts of development may be mitigated.

OS 19.9 – This policy requires that when existing information indicates that a site proposed for development may contain paleontological resources, a paleontologist shall monitor site grading activities, with the authority to halt grading to collect uncovered paleontological resources, curate any resources collected with an appropriate repository, and file a report with the Planning Department documenting any paleontological resources that are found during the course of site grading.

OS 19.10 – Transmit significant development applications subject to CEQA to the San Bernardino County Museum for review, comment, and/or preparation of recommended conditions of approval with regard to paleontological resources.

3.7.2 Existing Conditions

The land comprising the proposed project site is located in the Desert Center area of Riverside County, California. The proposed project and its alternatives occupy approximately 1,200 acres within a relatively broad and undeveloped basin in the northern portion of Chuckwalla Valley. This region is at the juncture of three geologic provinces in eastern southern California, the Transverse Ranges, Salton Trough, and Mojave Desert. The site is bordered to the west by the Eagle Mountains, to the northeast by the Coxcomb Mountains, and to the south by the continuation of the Chuckwalla Valley. Three ephemeral washes are within the DHSP study area: Pinto Wash, Big Wash, and Eagle Creek. All three are located to the north and west of the proposed solar facility boundary line. Several unpaved roads transect portions of this area. Vegetation in the area generally consists of creosote, sage, and similar plant communities of the southern California deserts. Elevation at the proposed solar facility site is approximately 600 feet above mean sea level (amsl). Development in the surrounding area includes the rural community of Desert Center, California; Lake Tamarisk Desert Resort; the Eagle Mountain Mine; and Desert Sunlight, an approved neighboring solar project. The environmental baseline for the proposed project and alternatives includes only the preliminary construction of the Desert Sunlight Solar Project that had been completed in September 2011. Joshua Tree National Park, which is managed by the National Park Service and is largely designated as wilderness, surrounds the majority of the DHSP to the west, north, and east.

Previously Identified Paleontological Resources in the DHSP Vicinity

A region of several miles surrounding the proposed solar facility site and gen-tie alternatives was evaluated for the recorded presence of paleontological resources and the potential for the geologic units in the region to contain significant paleontological resources. This evaluation consisted of three parts: a literature review, a records search, and contacting local experts (Roeder 2011). The literature review included a detailed examination of geologic maps of the area. In addition, pertinent published literature and unpublished manuscripts on the geology and paleontology of eastern Riverside County were reviewed. In order to gather existing paleontological resource data in the proposed project area, available published resources were consulted, including books, journals, and maps, and information available via the internet on government websites. An online search was also conducted for paleontological assessments conducted within the proposed project boundaries and surrounding areas. Of particular interest were the survey and construction monitoring reports associated with the nearby projects in the Chuck-

walla Valley including: DSSF, Rio Mesa Solar Energy Generating Facility (RMSEGF), Palen Solar Energy Project (PSEP), Genesis Solar Energy Project (GSEP), and the Devers–Palo Verde No. 2 Transmission Line Project (DPV2).

Second, a records search at the Vertebrate Paleontology Section of the Natural History Museum of Los Angeles County and at the UC Berkeley Museum of Paleontology was completed. Museum collection records were searched to determine whether there are any known fossil localities in or near the boundaries of the proposed project area. Also the records search identified information on the geologic units present in the proposed project area, and helped in determining the paleontological sensitivity rating of those geologic units to assess potential impacts to nonrenewable paleontological resources.

Finally, Mr. Robert (Bob) E. Reynolds formerly of the Department of Earth Sciences, San Bernardino County Museum, and Dr. J. D. Stewart of URS Corporation were interviewed on the geology and paleontological resources of the study area.

The review of previous paleontological research conducted in the DHSP vicinity showed that the region is poorly understood. Very few comprehensive studies have taken place, and few finds have been reported to local museums. A search of the vertebrate paleontological records of the Natural History Museum of Los Angeles County (LACM) indicates that there are no known paleontological resources within in the study area. However, vertebrate fossil localities have been identified in the vicinity within the same or similar sedimentary deposits. East-southeast of the proposed project area, north of Interstate 10, and on the southwest side of Ford Dry Lake, LACM locality 5977 yielded a fossil specimen of a pocket mouse (*Perognathus)*. North-northwest of the proposed project between the Eagle and Coxcomb Mountains, older Quaternary deposits in the Pinto Formation yielded fossil specimens of tortoise (*Gopherus)*, horse (*Equus)*, and camel (*Camelops* and *Tanupolama stevensi)* from fossil localities LACM (CIT) 208 and LACM 3414. In addition, Joshua Tree National Park notes that there are paleontological deposits in the vicinity of the proposed project area within the Park boundaries (NPS 2011).

More recently, there has been an influx of paleontological information associated with the large energy projects proposed and under construction in the Chuckwalla Valley and the Palo Verde Mesa. Originally, the low number of finds in the project vicinity was interpreted as an indication of low sensitivity. However, paleontological field survey and construction monitoring associated with these large projects in the last decade have consistently identified significant paleontological resources in both surface and buried contexts. For example, during construction of the GSEP project paleontological monitors have found multiple vertebrate fossils, primarily tortoise carapace and bones. Multiple studies have identified paleosols (old soil horizons) within the Quaternary alluvium of the region. These horizons formed slowly through mechanical and chemical erosion during wetter periods in the Late Pleistocene of the Colorado Desert. These conditions are very favorable for the preservation of fossils, especially short-lived species such as rodents. These paleosols have been identified below desert pavement in the southern Chuckwalla Valley (Reynolds 2012), south of Interstate 10 near State Route 177 (Reynolds 2011), and at the RMSEGF (Stewart et al 2012). In his paleontological assessment of the proposed RMSEGF Stewart and his colleagues (2012) recognized at least two paleosols between six and seven feet below the modern ground surface of the Palo Verde Mesa. These reddish-brown paleosols containing whitish caliche masses extend for more than 13 miles, possibly indicating

the presence of a buried regional surface. AMS radiocarbon dates from fossil tortoise shell fragments indicates the paleosol is approximately 13,000 years old (Roeder 2012b).

Finally, a paleontological study was produced as part of the Desert Sunlight Solar Farm, immediately to the north of the solar facility. This study inferred that alluvial sheet wash deposits consisting of gravelly (pebble) sands covering the DSSF were less than 500 years in age. Also young alluvial deposits which consisted of silty sand and sand, with minor amount of sandy pebble gravels dated less than 1000 years (ECORP Consulting, Inc. 2010). This study also identified older alluvial fan deposits consisting of coarse sandy cobbly gravel with strong pavement development and varnish formation. Based on comparisons to other dated alluvial fan deposits in the area, the area in question has an inferred age of late Pleistocene (>12,000 years before present). The field study for the proposed project examined older Pleistocene deposits but not Quaternary alluvium. No paleontological resources were observed. However, during construction, paleontological monitors have identified several significant vertebrate fossils including tortoise (*Gopherus*), horse (*Equus*), and camel.

Related to this work, the Riverside County Transportation and Land Management Agency (TLMA) has produced a paleontological sensitivity map of the County. The mapping indicates that areas underlain by playa lake, eolian and younger alluvial deposits within and around the Ford Dry Lake and Palen Dry Lake basins have a high paleontological sensitivity rating. Younger alluvium upslope from the lakebed has a low sensitivity rating, and older alluvium is assigned an undetermined sensitivity rating, according to the TLMA.

The results of these studies suggest that the Chuckwalla Valley is more paleontologically sensitive than originally believed (Roeder 2011, 2012a).

Paleontological Resources Identified within the DHSP

Given the results of recent surveys and construction monitoring in the Chuckwalla Valley and the Palo Verde Mesa, a complete paleontological field survey of the proposed DHSP was required. Between December 4, 2011 and January 2, 2012 Chambers Group conducted a paleontological field study of the proposed solar facility site, and gen-tie line Alternatives E. This work was conducted under BLM Field Authorization CA 12-01 and BLM Paleontological Investigation Permit No. CA-11-07-04P, and the results were presented in a report submitted to BLM (Roeder 2012a). A second paleontological field survey covering gen-tie line Alternatives B, C, and D was conducted in May of 2012 under BLM Field Authorization CA 12-05 (Roeder 2012b). The purpose of these field studies was to physically evaluate the geological mapping and to field check previously proposed paleontological sensitivity ratings. The field survey involved inspections of surface exposures for the presence of paleontological resources. During these surveys, exposures of Quaternary alluvium (Qal), Pleistocene nonmarine deposits (Qc), older Pleistocene nonmarine deposits (Qco), Quaternary sand (Qs), and Quaternary lake sediments (Ql) were observed at the surface and in shallow stream drainages. Most of the DHSP area was underlain by Quaternary alluvium on the surface of gently sloping alluvial fans. Most the material consisted of gravelly sands with some cobbles. These sediments became finer grain further away from the source area, the bases of the local mountains. Eight fossil localities were identified within the proposed project and alternative sites. One fossil locality, a mineralized tortoise shell fragment, was found in Quaternary alluvium in the easternmost parcel of the solar facility. Another fossil locality, a possible pelvis fragment from a large mammal, was found

along gen-tie line Alternative B/C. Five other fossil localities were clustered in dune sands on the edge of possible Quaternary lake sediments along gen-tie line Alternative E. The species identified here include: tortoise, rodent, rabbit, and bird.

As noted above, paleontological field assessments of those portions of the gen-tie alternatives which fall on Metropolitan Water District of Southern California (MWDSC) land have not been conducted.

Table 3.7-1. Paleontological Resources Identified within the DHSP

Project Component	Geologic Unit	Field Number	Taxa Description
Eastern Portion of Solar Facility (all alternative configurations)	Quaternary alluvium	MAR2011-12-04-01	*Gopherus* (tortoise)
Alternative B/C	Quaternary alluvium	STM05272012-01	Possible large mammal pelvis
Alternative E	Quaternary lake sediments?	MAR2011-12-11-01	*Gopherus* (tortoise)
Alternative E	Quaternary lake sediments?	MAR2011-12-11-02	*Rodentia* (rodent)
Alternative E	Quaternary lake sediments?	MAR2011-12-11-03	*Aves* (bird), *Rodentia* (rodent)
Alternative E	Quaternary lake sediments?	STM2011-12-11-01	*Gopherus* (tortoise)
Alternative E	Quaternary lake sediments?	STM2011-12-11-02	*Leporidae* (rabbit)
Alternative E	Quaternary lake sediments?	STM2011-01-02-01	Rodentia (rodent)

The literature search, record search, and field studies were used to identify the geologic units present in the DHSP area and to classify them according to the Potential Fossil Yield Classification (PFYC) system.

Geologic Units

Previous research indicates that the predominant geologic units in the DHSP area are Quaternary Sands (QS), Quaternary Alluvium (Qal), Quaternary lake or playa sediments (Ql), Pleistocene nonmarine deposits (Qc), Older Pleistocene nonmarine deposits (Qco), and Quaternary-Tertiary playa deposits (QT) (Table 3.7.2; see Figure 3.7.1 in Appendix A).

Table 3.7-2. Surficial and Bedrock Units Present within the Project Area

	Acres per Geologic Unit					
Project Component	Qal	Qs	Ql*	Qc	Qco	QT*
Solar Facility East	1052				X	X
Solar Facility West	155					
Alternative B/C	411			23	18	
Alternative D	354			37		X
Alternative E	371	82	X	7		X

*Possibly present at depth.
X = Possible presence.

Quaternary Sand (QS)

Although not formally mapped, Quaternary sand deposits are present in the proposed project vicinity, represented as small dunes. These deposits represent aeolian (dune sand) and are in

active phases of the dune cycle. These dunes move slowly with the rate depending on the direction and wind speed of the prevailing winds. Elsewhere, older sand dune deposits have yielded Late Pleistocene vertebrate fossils. Also, pond deposits associated with sand dunes have yielded significant fossils. Many areas of the Mojave and Colorado deserts, Aeolian (wind) forces have deflated older Quaternary alluvium sediments underlying dune fields which have yielded late Pleistocene vertebrates. A portion of the gen-tie line Alternative E route is covered by sand dunes.

Quaternary Alluvium (Qal)

Most of the proposed project area is underlain by Quaternary alluvium. Much of the ground surface of the western Chuckwalla Valley is covered by recent sediments, including alluvial sands, gravels, and cobbles in modern washes and on alluvial fans. The thickness of this Quaternary valley fill is highly variable. All of this alluvium has been and still is being washed down from the adjacent mountains and stratified by water, with the coarsest material near the mountain bases and finer grained and well stratified silts and clays further out in the basin. Broad alluvial fans are composed of unconsolidated deposits in a heterogeneous body of sediment, consisting of boulders, gravel, sands, and fine silts and clays. In general, these surficial deposits are likely Holocene (less than 10,000 years) in age in areas such as active stream drainages and on the fan surfaces. However, Quaternary alluvium is more complex structurally and age-wise than the geologic mapping indicates. Geologic mapping of eastern Chuckwalla Valley indicates that no fewer than five Pleistocene-Holocene alluvial units span the middle Pleistocene to Holocene. Because of this, the widespread temporal correlation of major alluvial episodes is difficult. The underlying factor controlling Quaternary deposition is probably contemporaneous climatic change over large regions. Recovery of datable paleontologic remains from alluvial fan sequences would thus have significance in understanding the Quaternary structural and paleoenvironmental record.

Quaternary alluvium has been noted over much of the proposed solar farm site and parts of gen-tie line Alternatives B, C, and E. During field survey of the easternmost solar facility parcel, one fossil locality [*Gopherus* (tortoise)] was identified within this geological unit (Roeder 2012a). A second fossil locality within this geological unit, a possible pelvis of a large mammal, was identified along gen-tie line Alternative B/C. In addition, paleosols which may contain small mammal fossils, were noted along gen-tie line Alternatives B/C and D near the SCE Red Bluff substation (Roeder 2012b). These paleosols are similar to those found at the RMSEGF. Finally, nearby LACM fossil localities were also located in Quaternary alluvium. These older Quaternary deposits yielded fossil specimens of tortoise (*Gopherus)*, horse (*Equus)*, and camel (*Camelops* and *Tanupolama stevensi).*The approximate ages of these fossils are unknown.

Quaternary lake or playa sediments (Ql)

Quaternary lake or playa sediments are usually fine grained and consist of partly gypsiferous silt and clay, and in southern California have yielded significant fossils. Frequently Quaternary alluvium and dune sand overlay these lacustrine deposits. Recent geological maps place Quaternary lake or playa deposits 1,000 feet east of the Alternative E gen-tie alignment; the identification of multiple fossil localities during paleontological field survey for the proposed project suggest that these deposits may be present at the surface in a portion of gen-tie line Alternative E. The species identified here include: tortoise, rodent, rabbit, and bird. However, the ages of these fossils are unknown. These Quaternary sediments were probably deposited as a result of an

expanded ancient Palen Lake (now Palen Dry Lake) and may interfinger at depth with Quaternary alluvium. If these lake or playa sediments are present within the DHSP area, they have the potential to yield significant fossils.

Pleistocene nonmarine deposits (Qc)

Sedimentary rocks of unnamed Pleistocene nonmarine sediments sticking up through Quaternary alluvium at the southern terminus of all of the gen-tie alternatives (A-E) near the Red Bluff Substation. Although there are no reliable age estimates for these deposits, they may be in excess of 100,000 years in age. Because of their proximity to the northern edge of the Chuckwalla Mountains, these sediments probably consist of coarse fanglomerates (sandstone supported pebbles, gravel, cobbles and boulders). Paleosols, which have the potential to yield significant small vertebrate fossils, were identified in this unit along Alternative D. Any diagnostic fossils from this rock unit would be considered significant.

Older Pleistocene nonmarine deposits (Qc_o)

Although not noted during the adjacent Desert Sunlight Solar Farm paleontological field survey (Aron and Kelly 2011), sedimentary rocks of older Pleistocene non-marine sediments are sticking up through Quaternary alluvium at the southern terminus of gen-tie line Alternatives B and C. There are no reliable age estimates for these deposits, but they may be 1 to 2 million years in age. Because of their proximity to the northern edge of the Chuckwalla Mountains, these sediments probably consist of coarse fanglomerates (sandstone supported pebbles, gravel, cobbles and boulders). Recent investigations of these deposits that crop out east of SR 177 and west of the western Chuckwalla Valley Road and on the south side of Chuckwalla Valley have found red paleosols (clays) visible below the desert pavement in washes and gullies. This find suggests that there is a potential for paleosols in older Pleistocene nonmarine deposits across the Chuckwalla Valley. Any diagnostic fossils from this rock unit would be considered significant.

Quaternary-Tertiary playa deposits (QT)

This unit has been interpreted as an abandoned Colorado River channel. These deposits are indicated by polished cobbles and cross-bedded sand in surface outcrops. Previous researchers have noted these deposits at elevations between 400 and 600 feet in the Palen Mountains, between the McCoy and Mule Mountains, and from the tip of the Big Maria Mountains to an area near the current Blythe airport. These regional finds suggest the possibility that these sediments may be present at elevations below 600 feet within the easternmost solar facility parcel, and in portions of the gen-tie line Alternative E alignment. Any diagnostic fossils from possible Quaternary-Tertiary deposits would be considered significant.

Potential Fossil Yield Classification

Class 1 – Very Low

Geologic units rated with a very low yield potential are primarily those that are not likely to contain fossil remains, such as igneous rocks (cooled magma), and metamorphic rocks (rocks changed by heat and pressure), as well as sedimentary rocks that are older than 542 million years (Precambrian in age). No rock units assigned to Class 1 occur within the DHSP area.

Class 2 – Low

Geologic units with low yield potential are those that are not likely to contain vertebrate fossil or scientifically significant non-vertebrate fossils. These units tend to be those that are younger than 10,000 years and sediments that have undergone significant physical and chemical changes. No rock units assigned to Class 2 occur within the DHSP area.

Class 3 – Moderate or Unknown

Geologic units with moderate or unknown yield potential are sedimentary deposits in which fossil discoveries vary in significance, abundance, and predictable occurrence (moderate), or sedimentary units of unproven or unknown fossil potential. No rock units assigned to Class 3 occur within the DHSP area.

Class 4 – High

Geologic units with high yield potential are those that contain a high occurrence of significant fossils that have been documented, but which may vary in occurrence and predictability. Quaternary sand (Qs), Quaternary alluvium (Qal), Quaternary lake deposits (Ql), Pleistocene nonmarine deposits (Qc), older Pleistocene nonmarine deposits (Qco) and Quaternary-Tertiary *playa* sediments (QT) are assigned a PFYC of Class 4.

Class 5 – Very High

Geologic units with very high yield potential are those that consistently and predictably produce vertebrate or scientifically significant non-vertebrate fossils. No rock units assigned to Class 5 occur within the DHSP area.

Summary

Geologic strata with a high potential rating according to the PFYC system underlie the proposed solar facility and portions of all of the gen-tie alternatives.

3.8 FIRE AND FUELS MANAGEMENT

This section describes the environmental and regulatory settings associated with the construction and operation of the proposed project and alternatives with respect to fire and fuels management. The project study area for the fire and fuels management impact analysis includes the portion of the Chuckwalla Valley within a mile of the proposed project site and alternatives, as this is the limit of the area likely to be affected by the Desert Harvest Solar Project (DHSP) with respect to fire and fuels management.

3.8.1 Applicable Regulations, Plans, and Standards

Federal

Federal Energy Regulatory Commission

The Federal Energy Regulatory Commission (FERC) requires utilities to adopt and maintain minimum clearance standards between vegetation and transmission voltage power lines. These clearances vary depending on voltage. In most cases, however, the minimum clearances required in state regulations are greater than the federal requirement. In California, the state has adopted General Order 95 rather than the North American Electric Reliability Corporation (NERC) Standards as the electric safety standard for the State. Since the state regulations meet or exceed the FERC standards, the FERC requirements are not discussed further in this section, as compliance with the state requirements will ensure that the federal requirements are met.

Federal Wildland Fire Management Policy

The Federal Wildland Fire Management Policy was developed in 1995 and updated in 2001 by the National Wildfire Coordinating Group, a federal multi-agency group that establishes consistent and coordinated fire management policy across multiple federal jurisdictions. Guidance for implementing the policy was issued in 2008. An important component of the Federal Wildland Fire Management Policy is the acknowledgement of the essential role of fire in maintaining natural ecosystems. The Federal Wildland Fire Management Policy and its implementation guidance are founded on the following guiding principles:

- Firefighter and public safety is the first priority in every fire management activity.
- The role of wildland fire as an essential ecological process and natural change agent will be incorporated into the planning process.
- Fire management plans, programs, and activities support land and resource management plans and their implementation.
- Sound risk management is a foundation for all fire management activities.
- Fire management programs and activities are economically viable, based upon values to be protected, costs, and land and resource management objectives.
- Fire management plans and activities are based upon the best available science.
- Fire management plans and activities incorporate public health and environmental quality considerations.

- Federal, State, tribal, local, interagency, and international coordination and cooperation are essential.
- Standardization of policies and procedures among federal agencies is an ongoing objective.

International Fire Code

Created by the International Code Council, the International Fire Code addresses a wide array of conditions hazardous to life and property including fire, explosions, and hazardous materials handling or usage. The International Fire Code places an emphasis on prescriptive and performance-based approaches to fire prevention and fire protection systems. Updated every 3 years, the International Fire Code uses a hazards classification system to determine the appropriate measures to be incorporated in order to protect life and property (often times these measures include construction standards and specialized equipment). The International Fire Code uses a permit system (based on hazard classification) to ensure that required measures are instituted.

National Electric Safety Code 1977, 2006

The National Electric Safety Code covers basic provisions related to electric supply stations, overhead electric supply and communication lines, and underground electric supply and communication lines. The code also contains work rules for construction, maintenance, and operational activities associated with electric supply and communication lines and equipment. The code, which must be adopted by states on an individual basis, is not applicable in the State of California. As stated previously, the State of California has adopted its own standard (General Order 95) rather than a general national standard. The National Electric Safety Code is not discussed further.

North American Electric Reliability Corporation Standards

The NERC is a nonprofit corporation comprising 10 regional reliability councils. The overarching goal of NERC is to ensure the reliability of the bulk power system in North America. To achieve its goal, the NERC develops and enforces reliability standards, monitors the bulk power systems, and educates, trains, and certifies industry personnel (NERC 2011). In order to improve the reliability of regional electric transmission systems and in response to the massive widespread power outage that occurred on the Eastern Seaboard, NERC developed a transmission vegetation management program that is applicable to all transmission lines operated at 200 kV and above to lower voltage lines designated by the Regional Reliability Organization as critical to the reliability of the electric system in the region. The plan, which became effective on April 7, 2006, establishes requirements for the formal transmission vegetation management program, which include identifying and documenting clearances between vegetation and any overhead, ungrounded supply conductors, while taking into consideration transmission line voltage, the effects of ambient temperature on conductor sag under maximum design loading, fire risk, line terrain and elevation, and the effects of wind velocities on conductor sway (NERC 2006). The clearances identified must be no less than those set forth in the Institute of Electrical and Electronics Engineers Standard 516-2003 (*Guide for Maintenance Methods on Energized Power Lines*) (NERC 2006).

Institute of Electrical and Electronics Engineers Standard 516-2003

The Institute of Electrical and Electronics Engineers is a leading authority in setting standards for the electric power industry. Standard 516-2003, *Guide for Maintenance Methods on Energized*

Power Lines, establishes minimum vegetation-to-conductor clearances in order to maintain electrical integrity of the electrical system.

State of California

California Fire Code

The California Fire Code is contained within Chapter 9 of Title 24 of the California Code of Regulations (CCR). Based on the International Fire Code, the California Fire Code is created by the California Buildings Standards Commission and regulates the use, handling, and storage requirements for hazardous materials at fixed facilities. Similar to the International Fire Code, the California Fire Code and the California Building Code use a hazards classification system to determine the appropriate measures to incorporate to protect life and property.

California Health and Safety Code

State fire regulations are established in Section 13000 of the California Health and Safety Code. The section establishes building standards, fire protection device equipment standards, high-rise building and childcare facility standards, interagency support protocols, and emergency procedures. Also, Section 13027 states that the state fire marshal shall notify industrial establishments and property owners having equipment for fire protective purposes of the changes necessary to bring their equipment into conformity with, and shall render them such assistance as may be available in converting their equipment to, standard requirements.

California Fire Plan

The California Fire Plan is the statewide plan for reducing the risk of wildfire. The basic principles of the Fire Plan are as follows:

- Involve the community in the fire management planning process
- Assess public and private resources that could be damaged by wildfires
- Develop pre-fire management solutions and implement cooperative programs to reduce community's potential wildfire losses.

One of the more important objectives of the plan regards pre-fire management solutions. Included within the realm of pre-fire management solutions are fuel breaks, the establishment of Wildfire Protection Zones, and prescribed fires to reduce the availability of fire fuels. In addition, the Fire Plan recommends that clearance laws, zoning, and related fire safety requirements implemented by state and local authorities address fire-resistant construction standards, hazard reduction near structures, and infrastructure (California Board of Forestry 2010).

CPUC General Order 95: Rules for Overhead Electric Line Construction

General Order (GO) 95 is the key standard governing the design, construction, operation, and maintenance of overhead electric lines in the State. It was adopted in 1941 and updated most recently in 2006. GO 95 includes safety standards for overhead electric lines, including minimum distances for conductor spacing, minimum conductor ground clearance, standards for calculating maximum sag, electric line inspection requirements, and vegetation clearance requirements.

Rule 31.2, Inspection of Lines, requires that lines be inspected frequently and thoroughly for the purpose of ensuring that they are in good condition, and that lines temporarily out of service be inspected and maintained in such condition as not to create a hazard.

Public Resources Code 4291

Public Resources Code 4291 provides that a person who owns, leases, controls, operates, or maintains a building or structure in, upon, or adjoining a mountainous area, forest-covered lands, brush-covered lands, grass-covered lands, or land that is covered with flammable material, shall at all times maintain defensible space of 100 feet from each side and from the front and rear of the structure, but not beyond the property line.

Riverside County

Riverside County General Plan

The Safety Element of the Riverside County General Plan provides for the mitigation of fire-related hazards through a combination of transportation, construction, land use, education, coordination and development standards. The Safety Element addresses the fire-related hazards present within the county, aiming to mitigate wildfire hazards, eliminate earthquake-induced fire hazards, and the reduction of long-term safety hazards related to wildfire effects, including erosion and debris flow. Riverside County has prepared graphics that identify fire-related hazards; the proposed project site and gen-tie line alternatives do not intersect any high-risk hazards (Riverside County 2003). Within the Riverside County General Plan, the Desert Center Area Plan identifies areas of steep slope as the riskiest areas for fire-related hazards. The proposed project and alternatives would occur on flat to gently sloping ground. The Plan calls for avoidance of building in high-risk areas, creating setbacks that buffer development from hazard areas, maintaining brush clearance to reduce potential fuel, installing low-fuel landscaping, utilizing fire resistant building techniques, and public education to reduce fire-related risk.

Riverside County General Plan policies relating to fire prevention are as follows:

S 5.1 Develop and enforce construction and design standards that ensure that proposed development incorporates fire prevention features through the following:

a. All proposed construction shall meet minimum standards for fire safety as defined in the County Building or Fire Codes, or by County zoning, or as dictated by the Building Official or the Transportation Land Management Agency based on building type, design, occupancy, and use.

b. In addition to the standards and guidelines of the Uniform Building Code and Uniform Fire Code fire safety provisions, continue additional standards for high-risk, high occupancy, dependent, and essential facilities where appropriate under the Riverside County Fire Protection Ordinance. These shall include assurance that structural and nonstructural architectural elements of the building will not:

- impede emergency egress for fire safety staffing/personnel, equipment, and apparatus; nor
- hinder evacuation from fire, including potential blockage of stairways or fire doors.

c. Proposed development in Hazardous Fire areas shall provide secondary public access, unless determined otherwise by the County Fire Chief.

d. Proposed development in Hazardous Fire areas shall use single loaded roads to enhance fuel modification areas, unless otherwise determined by the County Fire Chief.

Riverside County General Plan policies relating to wind- and earthquake-related "worst-case scenario" fires are as follows:

S 5.2 Reduce fire threat and strengthen fire-fighting capability so that the County could successfully respond to multiple fires.

S 5.3 Require automatic natural gas shutoff earthquake sensors in high-occupancy industrial and commercial facilities, and encourage them for all residences.

S 5.4 Utilize ongoing brush clearance fire inspections to educate homeowners on fire prevention tips.

Riverside County General Plan policies relating to long-term fire safety are as follows:

S 5.5 Conduct and implement long-range fire safety planning, including stringent building, fire, subdivision, and municipal code standards, improved infrastructure, and improved mutual aid agreements with the private and public sector.

S 5.6 Ensure coordination between the Fire Department and the Transportation Land Management Agency, Environmental Health Department and private and public water purveyors to improve firefighting infrastructure, during implementation of the County's capital improvement programs, by obtaining:

- replacement and/or relocation of old cast-iron pipelines and inadequate water mains when street improvements are planned;
- assessment of impact fees as a condition of development; and
- redundant emergency distribution pipelines in areas of potential ground failure or where determined to be necessary.

S 5.7 Develop a program to utilize existing reservoirs, tanks, and water wells in the County for emergency fire suppression water sources.

S 5.8 Periodically review inter-jurisdictional fire response agreements, and improve firefighting resources as recommended in the County Fire Protection Master Plan to keep pace with development, including construction of additional high-rises, mid-rise business parks, increasing numbers of facilities housing immobile populations, and the risk posed by multiple ignitions, to ensure that:

- Fire reporting and response times do not exceed those listed in the County Fire Protection Master Plan identified for each of the development densities described;
- Fire flow requirements (water for fire protection) are consistent with Insurance Service Office (ISO) recommendations; and

- The planned deployment and height of aerial ladders and other specialized equipment and apparatus are sufficient for the intensity of development desired.

S 5.9 Continue County Fire Department collaboration with the Transportation Land Management Agency (TLMA) to update development guidelines for the urban/wildland interface areas. These guidelines should include increasing the development area to at least 30 feet past the usual boundary.

S 5.10 Continue to utilize the Riverside County Fire Protection Master Plan as the base document to implement the goals and objectives of the Safety Element.

Riverside County Specific Plan #47

"In the interest of Public Safety, the project shall provide an Alternate or Secondary Access(s) as stated in the Transportation Department Conditions. Said Alternate or Secondary Access(s) shall have concurrence and approval of both the Transportation and Fire Departments and shall be maintained throughout any phasing."

Uniform Building Code (UBC) and Uniform Fire Code (UFC)

Every three years, the County's Building and Fire Codes are adapted from the Uniform Building and Fire Codes. They contain baseline minimum standards to guard against unsafe development and to ensure fire apparatus access to developments.

3.8.2 Existing Conditions

As described above, the study area for wildfires is defined as the area within 1 mile of the proposed project and alternatives. Based on the type of vegetation and topography in the area, this study area represents a reasonable maximum extent of a wildfire ignited from the project in native vegetation, which primarily surrounds the solar facility site under existing conditions. Sensitive receptors nearby the site include isolated rural residences at 1.24 miles or more from the site, and residences in the communities of Lake Tamarisk and Desert Center, located between 1 and 5 miles south of the solar facility site and within several hundred feet of the gen-tie line alternatives.

The behavior and characteristics of wildfires depend on a number of biophysical and anthropogenic (human-caused) factors. The biophysical variables are fuels (including composition, cover, and moisture content), weather conditions (particularly wind velocity and humidity), topography (slope and aspect), and natural ignition sources (particularly lightning). The anthropogenic variables are ignitions sources (including arson, smoking, campfires, and power lines) and management (wildfire prevention and suppression efforts). Existing anthropogenic ignition sources in the project study area include scattered rural residences, farm equipment, vehicles traveling on Kaiser Road and other roads in the project study area, and ongoing construction of the Desert Sunlight Solar Farm project directly north of the proposed DHSP solar facility site. Construction vehicles and equipment are listed in Section 2.5.5 and operational equipment is addressed in Section 2.5.6.

Vegetation with low moisture content is more susceptible to ignitions and burns more readily than vegetation with higher moisture content. Grasses tend to ignite more easily and burn faster, but tend to burn for a shorter duration than woody vegetation such as shrubs and trees. Conti-

nuity of fuels helps sustain wildland fires. Dense vegetation tends to carry a fire farther than patchy vegetation. The presence of invasive annual grasses, however, can provide fuel connectivity in patchy desert shrublands that would otherwise provide inconsistent fuel for a wildland fire. High winds provide oxygen to wildfires and can also blow glowing embers off burning vegetation to areas far ahead of the front of a fire, allowing fires to jump fuelbreaks in some cases. Conditions of low relative humidity will dry out fuels, increasing the likelihood of ignition. Finally, steep slopes and slopes with exposure to wind will carry fires rapidly uphill, and fires that are extinguished in mountainous areas are often contained along ridgelines.

The proposed project and alternatives would be in open desert, characterized by sparse vegetation and minimal development. Topography in the project study area is nearly level to gently sloping. The project study area in Riverside County has been determined to have a low to moderate susceptibility to wildfire (Riverside County 2003). There is no record of any fire greater than 10 acres having occurred within 1 mile of the project study area. A few large fires have been recorded over 10 miles away in JTNP (CAL FIRE 2010).

Fire Hazard Severity Zones (FHSZ) are areas of significant fire hazards based on fuels, terrain, weather, and other relevant factors that have been mapped by the California Department of Forestry and Fire Protection (CAL FIRE) in accordance with Public Resources Code (PRC) 4201-4204 and Government Code 51175-89. FHSZs are ranked from moderate to very high and are categorized for fire protection as within a Federal Responsibility Area (FRA) under the jurisdiction of a federal agency, within a State Responsibility Area (SRA) under the jurisdiction of CAL FIRE, or within a Local Responsibility Area (LRA) under the jurisdiction of a local agency. The project study area is primarily within a FRA under the jurisdiction of the BLM, and the solar facility site is within a moderate FHSZ (CAL FIRE 2006). BLM is responsible for the suppression, fuels, and prevention/mitigation/education in this area. Some of the gen-tie line routes are located within a SRA. All construction and operational activities would occur within a moderate FHSZ. The nearest high FRSZ is east of JTNP, about 35 miles from the DHSP site.

The BLM Palm Springs–South Coast Field Office operates 2 firefighting facilities. These stations are BLM Pinyon station collocated with Riverside County Station 30 in the Santa Rosa and San Jacinto Mountains National Monument (over 60 miles west of the project study area), and the Black Rock Interagency Fire Center in JTNP (60 miles west of the project study area). The South Coast Fuels technician and specialists are stationed at the Palm Springs Field Office in Riverside County. The Palm Springs–South Coast Field Office works cooperatively with many other federal, state and county agencies and fire departments. The CAL FIRE station in Desert Center is the closest response resource to the project study area. Under the California Fire Master Agreement the closest resource would be requested to respond until the responsible agency arrives to assume command.

All fire stations serving SRAs and LRAs in Riverside County are dispatched by the CAL FIRE Riverside Unit/Riverside County Fire Department Emergency Command Center (Perris Dispatch Center) and are part of the "Integrated Fire Protection System," under contract with the State. The BLM would be notified and a response from BLM would be dispatched if the event occurred on FRA lands. The Federal Interagency Communications Center, San Bernardino Dispatch, would be notified. Closest to the project study area are the Lake Tamarisk Fire Station in Desert Center (with one County paramedic assessment engine; 6 miles south of the solar facility site); Blythe Air Base in Blythe (with one County paramedic assessment engine; 50 miles east of the

project); Riverbend Volunteer Fire Department in Blythe (50 miles east of the project); La Quinta South Fire Station in La Quinta (with one City paramedic assessment engine and one County brush engine; 60 miles west of the project); Coachella Fire Station (with one City paramedic assessment engine; 55 miles west of the project); Sun City Shadow Hills Station in Indio (with one City paramedic assessment engine55 miles west of the project); and Indio, North Indio, and West Indio Fire Stations in Indio (55 miles west of the project; Riverside County Fire Department 2011).

In summary, fire risk in the project study area is moderate, and the potential for a major fire to occur in the area surrounding the proposed project is moderate.

3.9 SOILS AND GEOLOGY

This section describes the existing soil resources and geology in the area where the proposed Project and Alternatives would be implemented. The project study area for soils and geology encompasses all soil resources that could be affected by, and geological hazards that could affect, the construction, operation, and decommissioning of the Desert Harvest Solar Project (DHSP).

3.9.1 Applicable Plans, Policies, and Regulations

Federal

Federal Land Policy and Management Act of 1976 as Amended

The Federal Land Policy and Management Act (FLPMA) establishes policy and goals to be followed in the administration of public lands by the BLM. The intent of FLPMA is to protect and administer public lands within the framework of a program of multi-use and sustained yield, and the maintenance of environmental quality. Particular emphasis is placed on the protection of the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resources and archaeological values. FLPMA is also concerned with the protection of life and safety from natural hazards. The DHSP fits within the multi-use framework created by the FLPMA.

California Desert Conservation Area Plan

The California Desert Conservation Area (CDCA) Plan defines multiple use classes for BLM-managed lands in the CDCA, which includes land encompassing the DHSP. With respect to geological resources, the CDCA Plan aims to maintain the availability of mineral resources on public lands for exploration and development.

State of California

California Building Code

The 2006 International Building Code (IBC) is a model building code developed by the International Code Council (ICC) that sets rules specifying the minimum acceptable level of safety for constructed objects such as buildings in the United States. The IBC was developed to consolidate existing building codes into one uniform code that provides minimum standards to ensure the public safety, health and welfare insofar as they are affected by building construction, and to secure safety of life and property from all hazards incident to the occupancy of buildings, structures and premises. As a model building code, the IBC has no legal status until it is adopted or adapted by government regulation. With some exceptions, the California Building Code (CBC) is based on the IBC.

The CBC (2007) includes a series of standards that are used in project investigation, design, and construction (including grading and erosion control). The CBC 2007 Edition is based on the 2006 IBC as published by the ICC, with the addition of more extensive structural seismic provisions. Chapter 16 of the CBC contains definitions of seismic sources and the procedure used to calculate seismic forces on structures. The Applicant would construct the DHSP in accordance with the CBC and IBC requirements.

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act of 1972 regulates development and construction of buildings intended for human occupancy to avoid the hazards resulting from surface fault rupture. While this act does not specifically regulate solar fields and transmission lines, it does help define areas where fault rupture is most likely to occur. According to the Act, active faults are those that have experienced surface or near surface rupture in the past 11,000 years. Classification under the Act includes the condition that a fault must be "sufficiently active" and "well defined" by detailed site-specific geologic explorations in order to determine whether building setbacks should be established. No components of the proposed project or alternatives are within an Alquist-Priolo Earthquake Fault Zone. The nearest active faults to the DHSP site are the Blue Cut fault system (10 miles north, northwest) and the Pinto Mountain fault zone (29 miles northwest).

Seismic-Hazards Mapping Act

The Seismic Hazards Mapping Act of 1990 directs the California Geological Survey to delineate seismic hazard zones. The purpose of this act is to reduce the threat to public health and safety, and to minimize the loss of life and property by identifying and mitigating seismic hazards. These seismic hazards include areas that are subject to the effects of strong ground shaking such as liquefaction, landslides, tsunamis and seiches.[1] Cities, counties, and state agencies are directed to use seismic hazard zone maps developed by the California Geological Survey in their land use planning and permitting processes. This act requires that site-specific geotechnical investigations be performed prior to permitting most urban development projects within seismic hazard zones. The DHSP lies outside any designated seismic hazard zones.

Riverside County

Riverside County General Plan

The Safety Element of the Riverside County General Plan provides for the mitigation of geologic hazards through a combination of engineering, construction, land use and development standards. The Safety Element addresses the geologic hazards present within the county, including fault rupture, ground shaking, liquefaction, seismically generated subsidence, seiche and dam inundation, landslides/mudslides, non-seismic subsidence, and erosion. Riverside County has prepared graphics that identify geologic hazards, including fault rupture, liquefaction hazards and landslide hazards, and the project would not occur in any high-risk hazard areas (Riverside County 2003). Special consideration, including possible engineering/geologic evaluation, is required for developing sites designated on these maps. The Desert Center Area Plan, part of the General Plan, also provides an overview of mitigations for geologic hazards in the Desert Center area. The DHSP would comply with the relevant components of the Safety Element.

Riverside County General Plan policies relating to fault rupture, seismicity, and seismic risk are as follows:

[1] A seiche is a sudden oscillation of a body of water (e.g., lake or bay) producing fluctuations in the water level and caused by wind earthquakes, or changes in barometric pressure.

S 2.1 Minimize fault rupture hazards through enforcement of Alquist-Priolo Earthquake Fault Zoning Act provisions and the following policy, among others: Require geologic studies or analyses for critical structures, and lifeline, high occupancy, schools, and high-risk structures within 0.5 miles of all Quaternary to historic faults shown on the Earthquake Fault Studies Zone map.

Riverside County General Plan policies related to liquefaction are as follows:

S 2.2 Require geological and geotechnical investigations in areas with potential for earthquake-induced liquefaction, landsliding or settlement as part of the environmental and development review process, for any structure proposed for human occupancy, and any structure whose damage would cause harm.

S 2.3 Require that a State-licensed professional investigate the potential for liquefaction in areas designated as underlain by "Susceptible Sediments" and "Shallow Groundwater" for all general construction projects.

S 2.7 Require a 100 percent maximum variation of fill depths beneath structures to mitigate the potential of seismically-induced differential settlement.

Riverside County General Plan policies related to ground subsidence are as follows:

S 3.8 Require geotechnical studies within documented subsidence zones as well as zones that may be susceptible to subsidence prior to the issuance of development permits.

S 3.10 Encourage and support efforts for long-term, permanent monitoring of topographic subsidence in all producing groundwater basins, irrespective of past subsidence.

Riverside County General Plan policies related to slope stability are as follows:

S 3.5 During permit review, identify and encourage mitigation of onsite and offsite slope instability, debris flows, and erosion hazards on lots undergoing substantial improvements.

S 3.6 Require grading plans, environmental assessments, engineering and geologic technical reports, irrigation, and landscaping plans, including ecological restoration and revegetation plans, as appropriate, in order to assure the adequate demonstration of a project's ability to mitigate the potential impacts of slope and erosion hazards and loss of native vegetation.

3.9.2 Existing Conditions

Topography

The solar facility site is located in a largely undeveloped, vacant, and fairly flat area in the Chuckwalla Valley of the Sonoran Desert in eastern Riverside County. The Desert Center region is surrounded by the Eagle, Coxcomb, and Chuckwalla Mountains. Sand dunes with native desert habitats compose most of the Desert Center planning area (Riverside County General Plan, Desert Center Area Plan 2003). However, the solar facility site contains no active sand dunes and overlaps only a small portion of the Desert Center planning area. Only a portion of gen-tie Alternative E would traverse sand dunes. The solar facility site is underlain by alluvial sediments. (BLM 2011)

Geology

Regional Geology

The solar facility site lies within the Mojave Desert geomorphic province (BLM 2011), which is located in the westernmost part of the Basin and Range geomorphic province. The Mojave Desert geomorphic province is a broad interior region of isolated mountain ranges separated by expanses of desert plains. It as an interior enclosed drainage, with playas (or dry lake basins) being common. Fault trends largely control Mojave Desert topography. Mountain ranges in the Mojave Desert geomorphic province are composed of complexly faulted and folded basement rocks that range in age from pre-Cambrian (more than 570 million years before present (mybp) to Mesozoic (66 to 240 mybp). Volcanic and sedimentary rocks deposited in the Cenozoic (less than 66 mybp to present) are common as well. Younger faulting in the eastern half of the Mojave Desert geomorphic province, where the DHSP is located, is characterized by generally north- to northwest-trending normal faults associated with regional extension in the Basin and Range province.

The DHSP project components lie within the Chuckwalla Valley, which is bounded on the west by the Eagle Mountains, on the east by the Palen Mountains, and to the north by the Coxcomb Mountains. The Chuckwalla Mountains are to the south. The Chuckwalla Valley contains a thick sequence of Quaternary sedimentary deposits including Pleistocene fan deposits, Holocene alluvium, and dune sand. The bordering mountains expose primarily Precambrian metamorphic and Mesozoic granitic rocks. The Blue Cut and Pinto Mountain Fault Zones, north-northwest and 11 and 29 miles, respectively, from the solar facility site, are the nearest active faults. The San Andreas Fault is approximately 38 miles southwest of the solar facility site (USGS 2011).

Local Geology

The predominant geologic unit in the DHSP area is Quaternary alluvium and marine deposits (USGS 2005). No active faults are mapped in the current footprint of the DHSP or within the Chuckwalla Valley area more generally. The Blue Cut Fault Zone is the closest active fault zone; it is approximately 11 miles north of the solar facility site (USGS 2011).

Geologic Hazards

Geologic hazards that may affect the region include seismic hazards (ground shaking, surface fault rupture, soil liquefaction, and other secondary earthquake-related hazards), slope instability, ground subsidence, and erosion.

Primary Seismic Hazards

Seismic Sources. Numerous_active faults or seismic zones lie within 62 miles (100 kilometers) of the solar facility site (Table 3.9-1). The primary seismic hazard to the site is strong ground shaking from earthquakes along the Pinto Mountain Fault north of the solar facility site, the San Andreas Fault to the southwest, and the many faults within the Eastern California Shear Zone.

Table 3.9-1. Regional Active Earthquake Faults

Fault Section Name	Distance from Solar Facility Site (miles)	Distance from Solar Facility Site (km)	Trace Length (km)	Mean Magnitude	Mean Return Interval (years)	Slip Rate (mm/yr)
Blue Cut	11.0	17.7	79	7.1	—	—
Pinto Mountain	29.3	47.2	74	7.2	—	2.5
Brawley, western edge of seismic zone	36.8	59.2	60	7.0	—	—
San Andreas (Coachella)	36.8	59.2	69	7.2	69	20
Brawley, eastern edge of seismic zone	38.0	61.2	61	7.0	—	—
Pisgah–Bullion Mountain–Mesquite Lake	40.0	64.4	88	7.3	—	0.8

Source: Working Group on California Earthquake Probabilities, Special Report 203, Appendix A, BLM 2011

Surface Fault Rupture. The solar facility site is not within a currently delineated Alquist-Priolo Earthquake Fault Zone (Hart 1997). Well-delineated active fault lines cross through the region, as shown on California Geological Survey maps (BLM 2011); however, no active faults are mapped in the immediate vicinity of the DHSP. Therefore, active fault rupture is unlikely to occur in the project vicinity. While fault rupture would most likely occur along previously established fault traces, future fault rupture also could occur at other locations.

Historic Seismicity and Seismic Risk. Several earthquakes of magnitude 5.0 or greater have occurred within 70 miles of the project site since 1800 (BLM 2011). These include the 1948 Desert Hot Springs earthquake (Magnitude [M] 6.0), the 1949 Pinto Mountains earthquake (M5.0), and the 1992 Joshua Tree earthquake (M6.1) that was an aftershock of the Landers earthquake. All three earthquakes occurred within the San Andreas Fault system, which is the closest active fault system to the solar facility site.

The primary seismic risk at the solar facility site is a potential earthquake along the San Andreas Fault. This fault is 37 miles southwest from the site (Working Group on California Earthquake Probabilities 2008). Geologists at the USGS believe that the San Andreas Fault has characteristic earthquakes that result from rupture of each fault segment. The estimated characteristic earthquake is M 7.7 for the southern segment and 7.2 for the Coachella segment (USGS 2008). This segment has the longest elapsed time since rupture of any part of the San Andreas Fault. The last rupture occurred about 1680, based on dating by the USGS near Indio (Working Group on California Earthquake Probabilities 2008). This segment also ruptured on or around 1020, 1300, and 1450, with an average recurrence interval of about 220 years. The San Andreas Fault may rupture in multiple segments, producing a higher magnitude earthquake. Recent paleoseismic studies suggest that the San Bernardino Mountain Segment to the north and the Coachella Segment, both found within the southern segment of the San Andreas Fault system, may have ruptured together in 1450 and 1680 (Working Group on California Earthquake Probabilities 2008).

While accurate earthquake predictions are not possible, various agencies have conducted statistical risk analyses. In 2008, the California Geological Survey and the U.S. Geological Survey (USGS) completed probabilistic seismic hazard maps (BLM 2011). The recent report by the Working Group of California Earthquake Probabilities (2008) estimated a 58 percent conditional probability that an M6.7 or greater earthquake may occur between 2008 and 2038 along the southern segment of the San Andreas Fault (BLM 2011). The southern segment of the San Andreas Fault appears to originate near the Salton Sea and bends to the northwest, along the

southern base of the San Bernardino Mountains, through the Tejon Pass, and then along the northern base of the San Gabriel Mountains.

Site Acceleration. The potential intensity of ground motion may be estimated by the horizontal peak ground acceleration, measured in "g" forces (g is equivalent to the acceleration due to Earth's gravity, or 9.81 meters per second squared). Ground motions depend primarily on the earthquake magnitude and distance to the rupture zone. Accelerations also depend on attenuation by rock and soil deposits, direction of rupture, and type of fault. For these reasons, ground motions may vary considerably in the same general area. This variability can be expressed statistically by a standard deviation about a mean relationship. Important factors influencing the structural performance include the duration and frequency of strong ground motion, local subsurface conditions, soil-structure interaction, and structural details. Based on seismic hazard maps and soil data for the project study area, BLM (2011) measured the probable peak ground acceleration in the vicinity of the DHSP site. BLM estimated a peak ground acceleration of 0.24g, which corresponds with very strong perceived shaking and moderate potential damage. Peak ground acceleration calculations are used in determining CBC seismic design parameters.

Seismic Hazard Zones. This portion of Riverside County has not been mapped under the California Seismic Hazard Mapping Act (BLM 2011). Because the solar facility site is nearly flat, there is negligible potential for landslides (BLM 2011). The site lies in a moderate liquefaction potential zone designated by Riverside County (Riverside County 2003). See more regarding liquefaction under secondary seismic hazards below.

Secondary Seismic Hazards. Secondary seismic hazards related to ground shaking generally include soil liquefaction, ground subsidence, slope instability, tsunamis, and seiches.

- *Soil Liquefaction*. Liquefaction is the loss of soil strength from sudden shock (usually earthquake shaking), causing the soil to become a fluid mass. In general, for the effects of liquefaction to be manifested at the surface, groundwater levels must be within 50 feet of the ground surface and the soils within the saturated zone must also be susceptible to liquefaction. Water level data from a well located approximately 2 miles southwest of the proposed solar facility suggest static water levels in excess of 100 feet, with historic shallow water levels greater than 60 feet (BLM 2011). This may mean that liquefaction is unlikely on the solar facility site; however, as noted above, Riverside County has designated the area as having moderate liquefaction potential.
- *Ground Subsidence*. The solar facility site is within a Riverside County–designated "susceptible" subsidence zone (Riverside County 2003). Dry sands tend to settle and compact when subjected to strong earthquake shaking. The amount of subsidence is dependent on relative density of the soil, ground motion, and earthquake duration. Uncompacted fill areas of the site may be susceptible to seismically induced settlement.
- *Slope Instability*. Because the solar facility site has nearly flat topography, the potential for large-scale landslides is negligible. However, local surface failures and debris flows within and along incised drainage channels are likely if strong ground shaking occurs (BLM 2011).
- *Tsunamis and Seiches*. The solar facility site is far inland so there is no risk from tsunamis. There are no water storage reservoirs on or near the site, so the hazards from seiches are considered negligible in the project study area.

Other Geologic Hazards

Water Erosion

The site is nearly flat and undisturbed, with sparse native desert vegetation. Figure 3.20-2 in Appendix A shows surface waters in the project area, including 12 channels which traverse the DHSP site in a northwest-to-southeast direction. These channels are characterized by streams and washes which are typically sandy or rocky bed streams, where flow occurs in direct response to precipitation events, and is typically heavily laden with sediment. Erosion of the wash banks and shifting of channel beds is common. Larger magnitude storms tend to result in sheet flow in the project area, also moving in a northwest-to-southeast direction. There are no perennial streams within the solar facility site. The solar facility and gen-tie line would be sited in an area where sheet flooding and erosion could occur, with localized flooding that may overwhelm and shift ephemeral drainages during seasonal precipitation and flash flood events.

Wind Erosion

No active surface aeolian (wind-driven) sand deposits are present within the solar facility site; however, fluvial sand transport across the site likely carries sand downslope toward Pinto Wash, where fine sands may be taken up into the aeolian sand transport system toward the Palen Dunes. This aeolian sand corridor of the Clarks Pass system extends from Dale Dry Lake, through Pinto Basin in JTNP and Pinto Wash to just east of Ford Dry Lake, 20 miles southwest of the proposed solar facility site. As shown in Figure 3.3-1b, approximately 1.0 miles (18.9 acres) of Gen-tie line Alternative E would cross into the margins of the dune system located to the west of that alternative. Refer to Section 3.4 for a discussion of the sand corridor system with regard to habitat for protected species in the area.

Soil Resources

Soils and sediments are composed of minerals and organic materials in various ratios, derived from ambient conditions of the location within the landscape, vegetation type, rainfall, and the geologic source materials. The mineral portion of a soil consists of a ratio of sand, silt, and clay identified as soil texture. Soils contain naturally occurring background levels of metals derived from the factors influencing soil formation.

The soils on the solar facility site have not been surveyed by the Natural Resources Conservation Service (NRCS), a division of the United States Department of Agriculture that maps soil types across land in the United States, so specific soil types are not known for the solar facility site. However, analysis for the Desert Sunlight Solar Farm (DSSF) project just north of the DHSP site included a 2009 geotechnical study, incorporated by reference in Section 1.11 (BLM 2011). The geotechnical study of that site found that soils were generally uniform and were dominated by sandy texture. The similarities between the surface soil textures and vegetation cover at the DSSF project site and the DHSP site suggest that the subsurface soils characteristics are likely to be similar given the proximity of the two sites. Soils encountered during the DSSF geotechnical survey of the surrounding area consist of sand dune deposit, younger alluvium, and older alluvium. The older alluvium was slightly moist, likely due to winter rain infiltration and in a medium dense to dense condition, while the sand dune deposits were generally soft and dry (BLM 2011). Soils in the 2009 geotechnical study exhibited low to very severe resistivity and were classified as having a very low expansion potential (BLM 2011).

Soils south and east of the solar facility site were surveyed by the NRCS (BLM 2011). The survey area was associated with agricultural lands found next to Rice Road, within the gen-tie line Alternative D corridor and 1.5 miles east and 2.5 miles south of the solar facility site. The NRCS classified soils in this area as gravelly loamy coarse sands (Carsitas series) and loamy sands (Rositas series). According to the NRCS, Carsitas and Rositas soils typically do not have a topsoil horizon (BLM 2011). Soils are described as having C horizons from 0 to 60 inches below grade, indicating the absence of soil-forming. For both Carsitas and Rositas soils, water erosion hazard is minor and windblown erosion hazard is severe (BLM 2011).

The project study area, including the solar facility site, contains desert pavement (BLM 2011). Desert pavements are areas with rock fragments of pebble to cobble size that cover an underlying layer of sand, silt, or clay. Desert pavement areas typically have little or no vegetation cover. The extent to which desert pavement reduces wind erosion and resulting fugitive dust depends on the density of the rock fragments covering the underlying soil.

Desert pavements seem to form from two different processes (McAuliffe 2011). On rocky alluvial fans, fine dust settling out of the air accumulates between and below the surface layer of rocks, eventually forming a thin silt and clay layer that separates the surface rocks from the main part of the alluvial fan. Desert pavement also can form on sandy soils that contain significant amounts of gravel and rock fragments. In such situations, wind and water erosion can remove most of the sand and fine sediments from the surface, leaving the remaining rock fragments as the predominant surface layer.

3.10 ENERGY AND MINERAL RESOURCES

This section discusses energy and mineral resources relevant to the analysis of impacts from the proposed project and alternatives. The environmental baseline for considering impacts of the Desert Harvest Solar Project (DHSP) to energy and mineral resources is defined as the existing physical conditions at the commencement of analysis in September 2011. The project study area addressed in this section includes lands that may be affected directly and/or indirectly by construction, operation and decommissioning of the DHSP.

3.10.1 Applicable Plans, Policies, and Regulations

Existing laws and regulations applicable to mineral resources are described below. In some cases, compliance with these existing laws and regulations would serve to reduce or avoid certain impacts that might otherwise occur with the implementation of the proposed project or alternatives.

Federal

General Mining Act of 1872

This act authorizes and governs prospecting and mining for economic minerals, such as gold, platinum, and silver, on federal public lands. Under the Act, all citizens of the United States of America 18 years or older have the right under to locate a lode (hard rock) or placer (gravel) mining claim on federal lands open to mineral entry. These claims may be located once a discovery of a locatable mineral is made. Locatable minerals include but are not limited to platinum, gold, silver, copper, lead, zinc, uranium, and tungsten.

Mining and Mineral Policy Act of 1970

This Act establishes that the federal government encourages private enterprise in the development of a sound and stable domestic mineral industry and orderly economic development of mineral resources, research, and reclamation methods.

California Desert Conservation Area Plan

The California Desert Conservation Area (CDCA) Plan defines multiple-use classes for BLM-managed lands within the CDCA. This area encompasses the project study area. With respect to geological resources, the CDCA Plan aims to maintain the availability of mineral resources on public lands for exploration and development.

Geothermal Steam Act of 1970

The Geothermal Steam Act of 1970, as amended, (84 Stat, 1566; 30 U.S.C. 1001-1025) provides the Secretary of the Interior with the authority to lease public lands and other federal lands, including National Forest lands, for geothermal exploration and development in an environmentally sound manner. This authority has been delegated to the BLM, which implements the Act through the regulations contained in 43 Code of Federal Regulations (CFR) Part 3200 (BLM 2011a).

State

State Surface Mining and Reclamation Act (SMARA) of 1975

The Surface Mining and Reclamation Act of 1975 (SMARA) mandates that the State Geologist initiate mineral land classification in order to help identify and protect mineral resources in areas subject to urban expansion or other irreversible land uses which would preclude mineral extraction. SMARA also allows the State Mining and Geology Board (SMGB), after receiving classification information from the State Geologist, to designate lands containing mineral deposits of regional or statewide significance. Mineral lands are mapped according to jurisdictional boundaries (i.e., counties), mapping all mineral commodities at one time in the area, using the California Mineral Land Classification System.

The objective of mineral resource classification and designation is to ensure that mineral deposits of statewide or regional significance are available when needed. The SMGB, based on recommendations from the State Geologist and public input, prioritizes areas to be classified and/or designated. Areas subject to urban expansion or other irreversible land uses are given the highest priority.

Classification into mineral resource zones (MRZ) is completed by the State Geologist in accordance with the SMGB's priority list. Classification of these areas is based on geologic and economic factors without regard to existing land use and land ownership. The following MRZ categories are used by the State Geologist in classifying the State's lands:

- MRZ-1: Areas where the available geologic information indicates no significant mineral deposits or a minimal likelihood of significant mineral deposits.
- MRZ-2a: Areas where the available geologic information indicates that there are significant mineral deposits.
- MRZ-2b: Areas where the available geologic information indicates that there is a likelihood of significant mineral deposits.
- MRZ-3a: Areas where the available geologic information indicates that mineral deposits are likely to exist, however, the significance of the deposit is undetermined.
- MRZ-4: Areas where there is not enough information available to determine the presence or absence of mineral deposits.

If new information becomes available for a MRZ, such as through sampling or mining exploration, re-classification of that MRZ can occur. For example, a MRZ-4 classification could be re-classified to any of the other MRZ classifications. The area within the proposed solar facility boundary is currently classified as MRZ-4, which indicates areas with not enough information to determine the presence or absence of minerals (RCIP 2011).

California Renewables Portfolio Standard / Senate Bills 1078 (2002), 107 (2006), and 2 (2011)

The California Renewables Portfolio Standard (RPS) was established in 2002 under Senate Bill 1078, accelerated in 2006 under Senate Bill 107, and expanded in 2011 under Senate Bill 2. The RPS program is one of the most ambitious renewable energy standards in the U.S., requiring investor-owned utilities, electric service providers, and community choice aggregators to increase procurement from eligible renewable energy resources to 33 percent of total procure-

ment by 2020. The California Public Utilities Commission (CPUC) and the California Energy Commission (CEC) jointly implement the RPS program.

Local

County of Riverside General Plan

Policies

Wind Resources

- OS 10.1 Provide for orderly and efficient wind energy development in a manner that maximizes beneficial uses of the wind resource and minimizes detrimental effects to the residents and the environment of the County.
- OS 10.2 Continue the County's Wind Implementation Monitoring Program (WIMP) in order to study the evolution of wind energy technology, identify means to solve environmental and community impacts, and provide for an ability to respond with changes in the County's regulatory structure.

Solar Energy

- OS 11.1 Enforce the state Solar Shade Control Act, which promotes all feasible means of energy conservation and all feasible uses of alternative energy supply sources.
- OS 11.2 Support and encourage voluntary efforts to provide active and passive solar access opportunities in new developments.
- OS 11.3 Permit and encourage the use of passive solar devices and other state-of-the-art energy resources.

Geothermal and Fossil Fuels

- OS 12.1 Allow for the development of non-electrical, direct heat uses of geothermal heat and fluids for space, agricultural, and industrial heating in situations and localities where naturally occurring hydrothermal features will not be degraded.
- OS 12.2 Base all geothermal decisions on appropriate data relating to anticipated environmental, cultural, aesthetic, archaeological and social impacts.
- OS 12.3 Weigh the benefits of geothermal as a viable energy source against the protection of hot springs, geysers, thermal pools, and other thermal features for their ecological, educational, and recreational values.
- OS 12.4 Permit geothermal heat utilization for space heating in buildings.
- OS 15.1 Enforce California Division of Oil and Gas policies that direct the siting of oil and gas facilities in urban and non-urban areas.
- OS 15.2 Development of renewable resources should be encouraged.

Mineral Resources

- OS 14.1 Require that the operation and reclamation of surface mines be consistent with the State Surface Mining and Reclamation Act (SMARA) and County Development Code provisions.

- OS 14.2 Restrict incompatible land uses within the impact area of existing or potential surface mining areas.
- OS 14.3 Restrict land uses incompatible with mineral resource recovery within areas designated Open Space-Mineral Resources.
- OS 14.4 Impose conditions as necessary on mining operations to minimize or eliminate the potential adverse impact of mining operations on surrounding properties, and environmental resources.
- OS 14.5 Require that new non-mining land uses adjacent to existing mining operations be designed to provide a buffer between the new development and the mining operations. The buffer distance shall be based on an evaluation of noise, aesthetics, drainage, operating conditions, biological resources, topography, lighting, traffic, operating hours, and air quality.

3.10.2 Energy and Mineral Resources Existing Conditions

The BLM processes applications for wind, solar, geothermal, and fossil fuel energy exploration and production; the affected environment for these energy resources as well as mineral resources is characterized in this section.

Wind and Solar Resources

Wind power uses the naturally occurring energy of the wind for purposes including generating electricity, charging batteries, and pumping water. Utility-scale wind turbines, which capture the kinetic energy of the wind and convert it into electrical energy, are mounted on tall towers, usually 200 feet or more above the earth's surface. In utility-scale power applications, multiple turbines are connected to the utility grid. The BLM manages 20.6 million acres of public lands with wind potential in 11 western states, including California and the region where the proposed project site is located. A Programmatic EIS relating to the authorization of wind energy projects was completed in June 2005, which provided an analysis of the development of wind energy projects in the West. In addition, the BLM amended 52 land use plans to allow for the use of applicable lands for wind energy development, and issued a wind energy policy in 2006 to provide guidance on best management practices (BMP) and measures to mitigate potential impacts on birds, wildlife habitat, and other resource values. (BLM 2011b)

Solar radiation levels in the Southwest and the project study area are some of the best in the world, and the BLM manages 22 million acres of public lands with solar potential in 6 states, including California. As described in Section 1.1 of the Plan of Development for the proposed DHSP, the area of the Mojave Desert where the solar facility site is located ranks among the highest insolation values (solar radiation energy received on a given surface area in a given time) in North America, with a corresponding benefit to net capacity factor projections. Solar and wind energy development on BLM-administered lands can be approved under Title V of the Federal Land Policy and Management Act (FLPMA). (BLM 2011c)

As described in Section 2.2, the BLM and the DOE have published the "Draft Programmatic Environmental Impact Statement for Solar Energy Development in Six Southwestern States" (Solar PEIS). For the BLM, the PEIS is evaluating the agency's proposed actions to establish a new BLM Solar Energy Program applicable to utility-scale solar energy development on BLM-administered lands in six southwestern states (Arizona, California, Colorado, Nevada, New

Mexico, and Utah). For DOE, the PEIS evaluated the agency's proposed action to develop new program guidance relevant to DOE-supported solar projects. The project study area is in a Draft PEIS-designated proposed Solar Energy Zone or SEZ (the Riverside East SEZ).

Geothermal and Fossil Fuel Resources

Geothermal resources refer to thermal energy which is generated and stored beneath the surface of the earth, and may be accessed via drilling operations towards the purpose of generating power. Fossil fuels are natural resources including petroleum, natural gas, and coal, which also may be extracted from the earth and consumed (burned) to generate power. There are no known coal mining activities in Riverside County or the project study area. There are 70,361 producing acres under oil and gas leases on BLM-administered lands in California, and there are 14,720 producing acres under geothermal leases on BLM lands in the State (BLM 2005).

Geothermal and fossil fuel resources in the project study area were identified using a map produced by the California Department of Conservation (2001), and through review of the Riverside County General Plan (2008), and are summarized below.

- One geothermal field has been identified in western Riverside County (Desert Hot Springs), west of the proposed solar facility site, and several have been identified in central and southern Imperial County (Salton Sea; Brawley; Mesquite; Heber; East Mesa) (DOC 2001). Currently there is no active geothermal energy production in Riverside County, including the project study area; however, as mentioned, geothermal resources are known to exist in the County (RCIP 2008).
- Riverside County's petroleum resources are deposited in the form of oil and gas seeps (RCIP 2008). The Imperial Valley Basin, which encompasses the Salton Sea and is aligned in a northwest to southeast orientation through Riverside and Imperial Counties, continuing into Mexico, is identified as a "sedimentary basin with oil, gas, or geothermal production;" this basin is located to the west and southwest of the project study area and does not encompass the solar facility site (DOC 2001). The State Division of Oil and Gas does not report significant or active petroleum extraction in the County (RCIP 2008).

There are no geothermal, oil, or gas producers or seeps within 5 miles of the solar facility site.

Mineral Resources

The BLM groups minerals on federal lands into three distinct categories: (1) Locatable resources (subject to the General Mining Law of 1872, as amended); (2) Leasable resources (subject to various Mineral Leasing Acts); and (3) Salable resources (subject to mineral materials disposed of under the Materials Act of 1947, as amended) (BLM 2011d).

- **Locatable minerals** include hard rock resources that are typically metals with a unique or special use, such as gold and silver.
- **Leasable minerals** include those which are typically found in bedded deposits, such as oil, gas, and geothermal resources.
- **Salable minerals** include common variety of materials such as sand, stone, and gravel.

Local BLM Field Offices are responsible for selling mineral materials on public lands; for lands in the vicinity of the proposed project and alternatives, the Palm Springs–South Coast Field

Office has this responsibility (BLM 2011d). Leasable minerals relevant to the solar facility site and vicinity are previously discussed under "Geothermal and Fossil Fuels." Locatable and salable minerals are discussed below.

As mentioned in Section 3.10.1, the solar facility site is currently designated MRZ-4, as classified by the State Geologist in accordance with the SMGB's priority list. This designation indicates areas where there is not enough information available to determine the presence or absence of mineral deposits. The Mineral Resources Data System (MRDS), administered by the U.S. Geological Survey (USGS), provides data to describe metallic and nonmetallic mineral resources, including deposit name, location, commodity, deposit description, geologic characteristics, production, reserves, resources, and references (MRDS 2011). The MRDS online database was reviewed for the project study area, and records of surface mines, closed mines, occurrences/ prospects, and unknown/undefined resources within 5 miles of the proposed solar facility site are identified below in Table 3.10-1.

Table 3.10-1. Mineral Resources in the Project Study Area

Distance/Proximity to Solar Facility Site	MRDS Record #	Site Name	Commodity	Operation Type	Development Status
2.25 mi to southwest	10140398	Granite mine	Gold	Surface – underground	Past producer
3 mi to east	1026155	Gravel pits	Sand and gravel	Surface	Past producer
4.5 mi to south (adjacent to gen-tie Alts B & C)	10261788	H&K mine	Talc-soapstone	Surface	Past producer

Source: MRDS 2011

As shown in Table 3.10-2, the MRDS identifies 3 records within 5 miles of the solar facility site, all of which are past producers. There are numerous records identified by the MRDS as "Occurrence, Prospect, or Unknown" located south of Interstate 10, more than 7 miles south of the solar facility site (MRDS 2011); one of these records occurs adjacent to gen-tie line Alternative B and C. In addition, there are records identified by the MRDS 7 miles to the northwest of the solar facility site and more than 12 miles to the east site (MRDS 2011). There are no known locatable or salable mineral resources within the solar facility site boundary, and no current producers of mineral resources within 5 miles of the solar facility site.

Energy and Mineral Resources Used for the DHSP

Table 3.10-2 identifies metallic mineral, nonmetallic mineral, and gravel / concrete resources that would be used during construction of the DHSP. Metallic minerals would predominantly be used to produce steel and aluminum. Copper and other metallic minerals would be contained in the transformer, switchyard, and transmission line. Silica, cadmium, and tellurium may be contained in the PV panels, depending on the technology that is used.

Table 3.10-2. Mineral Resources Contained in Project Construction Materials

Project Structures and Facilities	Metallic Minerals	Non-Metallic Minerals	Gravel/ Concrete
PV Panels	x	x	
PV Panel Structures	x		x
O&M Building / Facility	x		x
Electrical Collection System	x		
On-Site Substation	x		x
Switchyard	x		x
Site Security, Fencing, and Lighting	x		x
Access Roads			x
Groundwater Well(s)	x		x
Electrical Interconnection	x		

As described in Section 2.4.4 of this EIS (see "Gravel, Aggregate, and Concrete Requirements and Sources"), gravel would be trucked to the solar facility site from a location to be determined. Concrete would be required for the inverter pads and the switchyard. Concrete for the inverter pads and vertical H-pile supports, if needed, would be pre-poured and transported to the solar facility site by truck, while concrete for the switchyard and panel supports would be brought by cement truck to the site. The DHSP would also require consumption of fossil fuels for construction vehicles as well as operations/maintenance vehicles; Sections 2.4.4 and 2.4.5 (Description of the Proposed Action and Alternatives) of this EIS describe construction activities, including as related to vehicle and equipment use, while Sections 3.2 and 4.2 (Air Quality) and Sections 3.5 and 4.5 (Climate Change) of this EIS provide specifics regarding the proposed project's fuel consumption and emissions.

3.11 LANDS AND REALTY

This section describes conditions related to land use and realty in the area that could be affected by the implementation of the proposed project and alternatives. The project study area for lands and realty is the California Desert Conservation Area (CDCA) and private lands within the Chuckwalla Valley, as this is the planning area that would be affected by the proposed project and alternatives.

3.11.1 Applicable Plans, Policies, and Regulations

This section discusses the applicable regulations, plans, and policies that govern land use within the project study area.

California Desert Conservation Area Plan 1980 (as amended)

The principal land use plan affecting the DHSP is the BLM's CDCA Plan. The CDCA Plan is described in Section 1.7 of Chapter 1.

Northern and Eastern Colorado Desert Coordinated Management Plan

The Northern and Eastern Colorado Desert Coordinated Management Plan (NECO Plan) is a Habitat Conservation Plan and amendment to the CDCA Plan that provides:

- A comprehensive framework for ecosystem management, including recovery of three populations of the desert tortoise;
- A single landscape basis for ecosystem management for three federal land administering agencies within the planning area: BLM, Joshua Tree National Park (eastern half only), and all of Chocolate Mountains Gunnery Range managed by the U.S. Navy; and
- A structure that integrates ecosystem management into a broader context of agencies' mandates, including BLM's multiple use management mission.

The NECO planning area consists of 5.5 million acres, covering portions of BLM field offices in Needles, El Centro, and Palm Springs. The plan amendment is also cooperatively joined by the California Department of Fish and Game through the statewide Sikes Act Memorandum of Agreement.

Riverside County Integrated Plan and Desert Center Area Plan

The principal land use plan affecting private land surrounding the solar facility site is the Riverside County General Plan (General Plan), which articulates the vision and planning principles for development in Riverside County. The Desert Center Area Plan (DCAP) is part of the General Plan and provides a more focused development plan for the Desert Center area, which includes the solar facility site and gen-tie line alternatives. In addition, the General Plan defines development policies for the Desert Center Policy Area, which is generally between Desert Center and Lake Tamarisk.

Current Riverside County plans, policies, and regulations do not take into account the County's significant solar resource. However, the County recognizes that its current General Plan does not address siting utility-scale solar facilities and that policy conflicts may exist. The County plans

to address siting of solar projects and will clarify these issues in a General Plan update and in future County Code revisions (CEC and BLM 2010).

The California Land Conservation Act of 1965

The California Land Conservation Act of 1965, commonly referred to as the Williamson Act, was enacted to preserve California's prime agricultural lands from urbanization. Since it was enacted, the act has been amended several times to allow its use not only to protect prime agricultural lands. Riverside County has identified soils in one gen-tie line alternative route, Alternative D, where it crosses Rice Road, as Williamson Act Non-Prime Agricultural Land (California Department of Conservation, Division of Land Resources Protection 2007). These are lands that are enrolled in a California Land Conservation Act contract and do not meet the criteria as Prime Agricultural Land. Non-Prime Farmland is defined as open space land of statewide significance under the California Open Space Subvention Act. Most non-prime lands are in agricultural uses, such as grazing or non-irrigated crops. Non-prime lands may also include other open space uses that are compatible with agriculture and consistent with local general plans (California Department of Conservation, Division of Land Resources Protection 2007).

California Desert Renewables Energy Conservation Plan (DRECP)

The DRECP is a Natural Community Conservation Plan being developed by a joint federal and State Renewable Energy Action Team (REAT) to provide for effective protection and conservation of desert ecosystems while allowing for the appropriate development of renewable energy projects. The REAT Team was formed consisting of the California Energy Commission, California Department of Fish and Game, Bureau of Land Management, and the U.S. Fish and Wildlife Service. The DRECP is intended to provide long-term endangered species permit assurances, facilitate the review and approval of renewable energy projects in the Mojave and Colorado deserts in California, and provide a process for conservation funding to implement the DRECP. It is anticipated that the DRECP also would serve as the basis for one or more habitat conservation plans (HCP) under the federal Endangered Species Act (ESA) and provide biological information necessary for consultation under ESA Section 10. The DRECP is not yet final, and no decision has been made for the DRECP. The conservation measures of this EIS are not inconsistent with the DRECP's goals.

Programmatic Environmental Impact Statement to Develop and Implement Agency-Specific Programs for Solar Energy Development (Solar PEIS)

In response to direction from Congress under Title II, Section 211 of the Energy Policy Act of 2005, as well as Executive Order 13212, Actions to Expedite Energy-Related Projects, the BLM and the DOE have collaborated to prepare the Solar PEIS pursuant to NEPA and CEQA regulations. The Solar PEIS evaluates utility-scale solar energy development in a six-state area, including that portion of the CDCA that is open to solar energy development in accordance with the provisions of the CDCA Plan. The planning area does not include lands within the CDCA that have special designations, such as National Monuments, Wilderness Areas, Wilderness Study Areas, Wild and Scenic Rivers, National Historic and Scenic Trails, Areas of Critical Environmental Concern, or other special management areas that are inappropriate for or inconsistent with extensive, surface-disturbing uses. The Solar PEIS is not intended to cover "pending applications," which includes Desert Harvest, since the Final PEIS had not been released as of the date of publication of the DHSP Draft EIS. Therefore, this Final EIS is not required to show

compatibility with the Solar PEIS. However, the DHSP lies within the boundaries of the Riverside East SEZ and occurs on land defined by the PEIS as developable.

Federal Power Act

Under the section 24 of the Federal Power Act (FPA), the following actions result in a withdrawal of public land: the filing of an application for (or issuance of) a preliminary permit with the Federal Energy Regulatory Commission (FERC) or the filing of an application for a license (with FERC) and the issuance of a license by FERC. A withdrawal created under the Federal Power Act on BLM-managed land would reserve the public land for use by a pending power project, and BLM would recognize that the licensee has a priority right to use the withdrawn lands. BLM has the authority to authorize ROW on the withdrawn land, but any ROW cannot infringe on the licensee's priority right to use the land. Section 3.11.3 describes an existing FERC withdrawal under the FPA over portions of the DHSP ROW application area.

3.11.2 Existing Conditions

Land use can be assessed by analyzing current land activities, land ownership, zoning (where applicable), and land use designations in adopted land use plans and policies. An assessment of land use must also consider legal guarantees or limitations on land use, such as those provided by easements, deeds, rights-of-way (ROW), claims, leases, licenses, and permits. BLM-administered lands are not zoned, but they may be encumbered by easements, ROWs, mining claims, and permits.

General Characteristics of Land in the Project Study Area

The area in the immediate vicinity of the solar facility and gen-tie line alternatives is largely a vacant, undeveloped, and flat open space area located in the Chuckwalla Valley of the Sonoran Desert in eastern Riverside County. Development in the surrounding area includes the rural community of Desert Center, California; Lake Tamarisk Desert Resort; the Eagle Mountain Mine; and the Desert Sunlight Solar Farm, an approved neighboring solar project that was under construction of its Phase 1A area as of the commencement of analysis in this EIS (September 2011). The environmental baseline for the proposed project and alternatives includes only the preliminary construction of the Desert Sunlight Solar Farm project that had been completed as of September 2011. Joshua Tree National Park, which is managed by the National Park Service and is largely designated as wilderness, surrounds the majority of the solar facility site to the west, north, and east. The general characteristics of the project study area are described in Chapter 1.

Land Ownership/Management

Figure 3.11-1 in Appendix A depicts the current land ownership in the vicinity of the proposed project and alternatives, as reported by the BLM (BLM 2011). The DHSP would be located chiefly on land that is under the jurisdiction of the BLM, and BLM land use designations established in the CDCA and NECO Plans would apply.

Portions of gen-tie line Alternatives B, C, D, and E would traverse private land. Gen-tie line Alternatives B, C, D, and E would cross parcels owned in fee by the Metropolitan Water District of Southern California (MWD). Gen-tie line Alternatives B and C would also cross one parcel

of private land near Lake Tamarisk. Table 3.11-1 provides information about private land ownership in the vicinity of the proposed project and alternatives.

Table 3.11-1. Land Ownership of Lands Overlain by the Proposed Project and Alternatives

Project Component	Private Land Crossed	Assessor Parcel Numbers
Solar Facility – Alts 3, 4, 5	None	Not applicable
Gen-Tie – Alts B, C	0.6 mile	807171005, 808161001
Gen-Tie – Alt D	5.1 miles	807172029, 811270001, 811142005, 811141011, 811260013, 811170013, 811170018, 811170017, 811170016, 808250015, 808250016, 808250005, 808240010, 808240008, 808240007, 811170019, 808250014, 808250003, 808240011, 808240012, 808250004
Gen-Tie – Alt E	4.25 miles	807172017, 807172018, 807191031, 807191030, 811122010, 811130019, 811160016

Source: BLM 2011; enXco 2011

BLM Land Use Designations

The BLM's CDCA establishes four multiple use classes (MUC), multiple use class guidelines, and plan elements for specific resources or activities, such as motorized vehicle access, recreation, and vegetation. Figure 3.11-1 in Appendix A depicts the multiple use classes assigned to BLM-administered land in the DHSP area, as designated in the NECO Plan. The multiple use classes are defined as follows:

- **Class C** (Controlled Use) – About 2.1 million acres designated Class C are managed to be preserved in a natural state; access generally is limited to nonmotorized and nonmechanized means, such as by foot or on horseback.
- **Class L** (Limited Use) – About 5.9 million acres designated Class L are managed to protect sensitive, natural, scenic, ecological, and cultural resource values. They provide for generally lower intensity, carefully controlled, multiple uses that do not significantly diminish resource values.
- **Class M** (Moderate Use) – About 3.3 million acres designated Class M are managed in a controlled balance between higher intensity use and protection. A wide variety of uses such as mining, livestock grazing, recreation, energy, and the development of new utility facilities are allowed.
- **Class I** (Intensive Use) – About 500,000 acres are Class I, managed for concentrated use to meet human needs. Reasonable protection is provided for sensitive natural values. Impacts are mitigated and impacted areas are rehabilitated, when possible.

The solar facility as well as most of the gen-tie line would be located on land designated by BLM Class M (Moderate Use). A portion of the gen-tie line Alternative E would cross areas designated as Class L, and all gen-tie line alternatives would cross a very small area of land designated as Class L upon entry into the Red Bluff Substation.

Riverside County General Plan Land Use Designations

Where the DHSP would be located on private land, the Riverside County General Plan land use designations would apply. In addition, all of the private land within the DHSP is subject to Riv-

erside County ordinances, the DCAP, and the Desert Center Policy Area, as applicable based on the location of individual parcels.

A 0.6-mile section of gen-tie line Alternative B and Alternative C, 5.1 miles of gen-tie line Alternative D, and 4.25 miles of gen-tie line Alternative E would be on private land designated as "Open Space–Rural (OS-RUR)." According to the General Plan:

> *The Open Space–Rural land use designation is applied to remote, privately owned open space areas with limited access and a lack of public services. Single-family residential uses are permitted at a density of one dwelling unit per 20 acres. The extraction of mineral resources subject to an approved surface mining permit may be permissible, provided that the proposed project can be undertaken in a manner that is consistent with maintenance of scenic resources and views from residential neighborhoods and major roadways and that the project does not detract from efforts to protect endangered species (Riverside County 2003).*

Relevant land use policies of the General Plan for Open Space-Rural (OS-RUR) are as follows:

- LU 20.1 – Require that structures be designed to maintain the environmental character in which they are located.
- LU 20.2 – Require that development be designed to blend with undeveloped natural contours of the site and avoid an unvaried, unnatural, or manufactured appearance.
- LU 20.3 – Require that adequate and available circulation facilities, water resources, sewer facilities, and/or septic capacity exist to meet the demands of the proposed land use.
- LU 20.4 – Ensure that development does not adversely impact the open space and rural character of the surrounding area.
- LU 20.6 – Provide programs and incentives that allow Open Space-Rural areas to maintain and enhance their existing and desired character (Riverside County 2003).

Gen-tie line Alternative D would also traverse 1.5 miles of land designated Agriculture (AG). According to the General Plan:

> *The Agriculture land use designation has been established to help conserve productive agricultural lands within the County. These include row crops, nurseries, citrus groves and vineyards, dairies, ranches, poultry and hog farms, and other agricultural related uses. Areas designated for Agriculture generally lack an infrastructure that is supportive of urban development (Riverside County 2003).*

Relevant land use policies of the General Plan for Agriculture (AG) are as follows:

- LU 16.1 – Encourage retaining agriculturally designated lands where agricultural activity can be sustained at an operational scale, where it accommodates lifestyle choice, and in locations where impacts to and from potentially incompatible uses, such as residential uses, are minimized, through incentives such as tax credits.
- LU 16.2 – Protect agricultural uses, including those with industrial characteristics (dairies, poultry, hog farms, etc.) by discouraging inappropriate land division in the immediate proximity and allowing only uses and intensities that are compatible with agricultural uses.

- LU 16.4 – Encourage conservation of productive agricultural lands. Preserve prime agricultural lands for high-value crop production.
- LU 16.5 – Continue to participate in the California Land Conservation Act (the Williamson Act) of 1965.
- LU 16.6 – Require consideration of State agricultural land classification specifications when a 2.5-year Agriculture Foundation amendment to the General Plan is reviewed that would result in a shift from an agricultural to a non-agricultural use.
- LU 16.7 – Adhere to Riverside County's Right-to-Farm Ordinance (Riverside County 2003).

Riverside County Zoning

Where the proposed project would be located on private land, Riverside County zoning would apply. Zoning classifications are defined in the Riverside County Land Use Ordinance, Ordinance 348, as amended, Article III. The ordinance details all permitted uses on private property based on the assigned zone classification.

Gen-tie line Alternatives D and E would cross private land zoned as Controlled Development Zone (W-2-10). Permitted uses include single-family dwellings, field and tree crops, outside storage of materials, and limited animal husbandry. Limited additional uses are permitted where the lot size is greater than 1 acre. Many additional uses are allowed by approval or by permit, including "structures and the pertinent facilities necessary and incidental to the development and transmission of electrical power" (BLM 2011).

Alternative D would also overlap private land zoned Agriculture, Light (A-1-20). As the name implies, a variety of agricultural land uses are permitted here. No power-generating facilities are permitted, but, in accordance with Section 13.1(11)(d), the Planning Director can approve uses that are deemed to be "substantially the same in character and intensity" as the listed uses (BLM 2011).

A 0.6-mile portion of Alternatives B and C would overlap one parcel of private land near Lake Tamarisk zoned Natural Assets (N-A). Permitted uses in areas zoned Natural Assets include some dwellings and accessory buildings, field and tree crops, grazing subject to stated limitations, and apiaries. Several other uses, including utility substations, are allowed by approval or by permit (BLM 2011).

3.11.3 Existing Uses

Lands and Realty-Related Uses

A number of easements, ROWs, and claims related to utility corridors, transmission lines, telephone lines, pipelines, railroads, roads, water transmission facilities, and mining claims are located in the vicinity of the solar facility. Land ownership is shown in Table 3.11-1. The solar facility site is entirely owned by the federal government and managed by BLM. A portion of the site is part of the BLM's Palen Ford Wildlife Habitat Management Area (WHMA). This portion of the site is excluded from Alternative 5 (see Figure 2-9 in Appendix A). The southwestern portion of the solar facility site is encumbered with prior authorizations and segregations. Two transmission line ROWs are held by Southern California Edison.

One road, pipeline, and a proposed transmission line ROW are held under a project under review by FERC for a transmission line and water pipeline associated with the Eagle Mountain Pumped Storage Project (EMPSP, "Power Project P-13123") (see Figure 2-3a for overlap with DHSP). A preliminary permit for this project was issued by FERC on August 13, 2008, but expired on August 13, 2011. The final license application for this project, dated June 22, 2009, is pending with FERC. The current FERC withdrawal is based on the Eagle Mountain Pumped Storage project boundary in maps submitted with the application for license. A letter from FERC to the project proponent dated March 15, 2012 vacated "non-essential withdrawals" and withdrawals outside project boundary as of September 30, 2011. This letter vacates the portion of the withdrawal created by the preliminary permit that is outside the project boundary as defined in the license application. The effect of this withdrawal is to reserve public lands for future use for a water pipeline by the licensee of Power Plant Project P-13123, if authorized under the FPA. BLM has the authority to issue ROW grants on the withdrawn land, but any ROW cannot infringe on the licensee's priority right to use the land. Several DHSP components would cross over the 145-foot-wide linear withdrawal for the buried water supply line and the withdrawal for an alternative transmission line route for the EMPSP. Overlapping DHSP components include

- The main access driveway from Kaiser Road to the DHSP (on the northern parcel);
- Interior access roads and electrical collector lines;
- The buried collector line between the southern and northern parcels; and
- Gen-tie Alternatives B, C, and D.

The gen-tie alternatives would cross the EMPSP water supply withdrawal on public land, but would cross the transmission alternative route on private land owned by the MWD and not subject to Section 24 of the FPA. Overall, the only DHSP components in EMPSP withdrawal areas on public lands would be power lines and unpaved access roads. BLM has determined that these facilities would not preclude use of public lands by the EMPSP (see Appendix P for full text of letter from BLM to FERC).

Land uses within the routes of the gen-tie line alternatives are shown in Table 3.11-2. The gen-tie line alternatives would cross two major transmission lines. The Kaiser 33-kilovolt (kV) transmission line, owned by Kaiser Ventures, runs parallel to Kaiser Steel Road. Several of the gen-tie line alternatives would cross SCE's existing 161 kV transmission line, which runs northwest to southeast. In addition, the Devers–Palo Verde No. 1 (DPV1) 500 kV transmission line runs parallel to Interstate 10. There are a number of smaller distribution lines that cross DHSP components as well.

In addition to ROWs for existing roads and transmission lines, portions of all of the gen-tie line alternatives would cross a designated two-mile-wide utility corridor (see Figure 3.11-1 in Appendix A). There are also multiple ROWs for existing underground oil and gas pipelines and telephone cables in the vicinity of the gen-tie line alternatives, as well as a ROW for a gas distribution pipeline, which parallels Kaiser Road. Twelve water wells and associated pipelines are within the vicinity of the DHSP. Two of the wells are owned by Kaiser Steel and the others are owned by private parties. West of gen-tie line Alternative B and Kaiser Road, the Riverside County Waste Management Department leases 160 acres from the BLM for a sanitary landfill.[1]

[1] Specific plans for a sanitary landfill are approved but are not currently in effect.

The lease, serial number CAS005340, was authorized in 1975 (BLM 2011). Land disturbance is evident in this area (BLM 2011).

Table 3.11-2. Existing Uses, Easements, and ROW Within Gen-Tie Line Alternative Routes

Owner	Use	Width (feet)	Location Relative to DHSP	BLM Serial File No.
Riverside County	Kaiser Road	300	Kaiser Road easement; Alternatives B and C would cross.	Not applicable
FERC	Transmission and Water Supply ROW	400	Northwest to Southeast through the Southwestern DHSP parcel; other overlaps with Gen-Tie Line Alternatives	P-13123-002
MWD	ROW for ditches and canals	Not applicable	All Gen-Tie Lines would cross.	R 07041
SCE	Transmission line	100	Northwest to southeast east of Kaiser Road; all Gen-Tie Lines would cross; Alternative D would parallel it for much of its length.	LA 0149780
SCE	Transmission line	25	Northwest to southeast east of Kaiser Road; all Gen-Tie Lines would cross; Alternative D would parallel it for much of its length.	LA 0153144
Caltrans	I-10	200	Road easement; all Gen-Tie lines would cross.	Not applicable
Caltrans	SR-177 (Desert Center Rice Road)	100	Road easement; all Gen-Tie Lines would cross.	Not applicable
SCE	Water pipeline and well	50	Alternatives B and C would cross.	LA 098376
Sprint	Underground telephone cable	15	All Gen-Tie Lines would cross.	CA 18888
Private owner	Private access road	12	Alternatives B and C would cross and parallel for part of length.	CA 37076
Kaiser Ventures, Inc.	Eagle Mountain Railroad	200	No project components would cross.	Not applicable

Source: BLM 2011

The solar facility would be sited within a proposed Solar Energy Zone to be designated under the Department of Energy and BLM Programmatic Solar Energy Development EIS (Office of Energy Efficiency and Renewable Energy and Bureau of Land Management, 2010). It is also within a California Renewable Energy Zone identified by the Renewable Energy Transmission Initiative. The DHSP site is also in a priority interconnection location within the California Independent System Operator; it would interconnect to the existing 500 kV transmission line, SCE's DPV1 Line.

3.12 NOISE AND VIBRATION

This section describes the existing noise conditions that could be affected by implementation of the proposed Desert Harvest Solar Project (DHSP) and alternatives. The project study area for noise encompasses all noise-sensitive land uses in the vicinity of the DHSP and noise-sensitive land uses along the traffic routes that would be used during construction, operation, and decommissioning.

Noise is defined as unwanted or extraneous sound. Sound is caused by vibrations that generate waves of minute air pressure fluctuations. Air pressure fluctuations that occur from 20 to 20,000 times per second can be detected as audible sound. The number of pressure fluctuations per second is normally reported as cycles per second or hertz (Hz). Different vibration frequencies produce different tonal qualities for the resulting sound. In general, sound waves travel away from the noise source as an expanding spherical surface. The energy contained in a sound wave is consequently spread over an increasing area as it travels away from the source. This results in a decrease in loudness at greater distances from the noise source.

Decibel Scales

Human hearing varies in sensitivity for different sound frequencies. The ear is most sensitive to sound frequencies between 800 and 8,000 Hz, less sensitive to higher and lower sound frequencies, and least sensitive to sound frequencies below 250 Hz. Peak sensitivity to pure tones typically occurs at frequencies between 2,000 Hz and 6,000 Hz. Relative sensitivity remains fairly high between about 250 Hz and 2,000 Hz. Relative sensitivity drops off slightly above 7,000 Hz, and drops off significantly below 200 Hz. In addition, relative sensitivity to different acoustic frequencies also varies with the intensity of the sound. Several different frequency weighting schemes have been developed, using different decibel (dB) adjustment values for each octave or 1/3 octave interval. Some of these weighting schemes are intended to approximate the way the human ear responds to noise levels; others are designed to account for the response of building materials to airborne vibrations and sound. The most commonly used decibel weighting schemes are the A-weighted and C-weighted scales.

The "A-weighted" decibel scale (dBA) is normally used to approximate human hearing response to sound. The A-weighted scale significantly reduces the measured pressure level for low frequency sounds while slightly increasing the measured pressure level for some middle frequency sounds. The "C-weighted" decibel scale (dBC) is often used to characterize low frequency sounds capable of inducing vibrations in buildings or other structures. The C-weighted scale makes only minor reductions to the measured pressure level for low frequency components of a sound while making slightly greater reductions to high frequency components than does the A-weighted scale.

Table 3.12-1 provides examples of typical dBA levels.

Table 3.12-1. Examples of Typical dBA Levels

Characterization	dBA	Example Noise Condition
Threshold of pain	130	Peak noise 50 feet behind firing position, M-16 and M-24 rifles.
	125	Mach 1.9 sonic boom under aircraft at 11,000 feet.
Possible building damage	120	Air raid siren at 50 feet.
Threshold of immediate NIPTS[1]	115	Mach 1.1 sonic boom under aircraft at 12,000 feet.
	110	Commercial fireworks (5 pound charge) at 1,500 feet.

Table 3.12-1. Examples of Typical dBA Levels

Characterization	dBA	Example Noise Condition
	105	Peak noise 50 feet behind firing position, .22 caliber rifle.
	100	Peak crowd noise, pro football game, inside open stadium.
Extremely noisy	95	Locomotive horn at 100 feet.
8-hour OSHA[2] limit	90	Large wood chipper processing tree branches at 30 feet.
Very noisy	85	Leaf blower at 5 feet.
	80	Jackhammer at 50 feet.
Noisy	75	Dog barking at 5 feet.
	70	Gas engine lawnmower at 5 feet.
Moderately noisy	65	Bulldozer, excavator, or paver at 50 feet.
	60	Pneumatic wrench at 50 feet.
	55	Fork lift or front end loader at 50 feet.
	50	Table saw at 25 feet.
Quiet	45	Vacuum cleaner at 5 feet.
	40	Idling locomotive at 50 feet.
	35	Street sweeper at 30 feet.
Very Quiet	30	Leaf blower at 50 feet.
	20	300 feet from busy 6-lane freeway.
Barely Audible	10	Typical daytime busy downtown background conditions.
Threshold of hearing, no hearing loss	0	

1 - NIPTS = noise-induced permanent threshold shift (permanent hearing damage)
2 - OSHA = Occupational Safety and Health Administration
Indicated noise levels are average dBA levels for stationary noise sources or peak noise levels for brief noise events and noise sources moving past a fixed reference point.
Average and peak dBA levels are not 24-hour CNEL (community noise exposure level) or Ldn (day-night noise level) values.
Decibel scales are not linear. Apparent loudness doubles with every 10 dBA increase, regardless of the initial dBA level.
Most adults have accumulated some hearing loss and have a threshold of hearing above 15 dBA. In occupational hearing conservation programs, a threshold of hearing between 20 and 30 dBA is considered normal.
Source: Desert Sunlight Solar Farm Project Final EIS and CDCA Plan Amendment 2011 – Table 3.10-1. Incorporated by reference in Section 1.11

Common Noise Descriptors

Varying noise levels are often described in terms of the equivalent constant decibel level. Equivalent noise levels (Leq) are used to develop single-value descriptions of average noise exposure over various periods. Such average noise exposure ratings often include additional weighting factors for annoyance potential due to time of day or other considerations. The Leq data used for these average noise exposure descriptors are generally based on A-weighted sound level measurements, although other weighting systems are used for special conditions (such as blasting noise).

Average noise exposure over a 24-hour period is often presented as a day-night average sound level (Ldn) or a community noise equivalent level (CNEL). Ldn values are calculated from hourly Leq values, with the Leq values for the nighttime period (10:00 p.m. to 7:00 a.m.) increased by 10 dB to reflect the greater disturbance potential from nighttime noises. CNEL values are very similar to Ldn values, but include a 5 dB annoyance adjustment for evening (7:00 p.m. to 10:00 p.m.) Leq values in addition to the 10 dB adjustment for nighttime (10:00 p.m. to 7:00 a.m.) Leq values. Except in unusual situations, the CNEL descriptor will be within 1.5 dB of the Ldn descriptor for the same set of noise measurements. Unless specifically noted otherwise, Ldn and CNEL values are assumed to be based on dBA measurements.

Working with Decibel Values

Noise levels are measured on a logarithmic, decibel scale because of the physical characteristics of sound transmission and reception; noise levels diminish (or attenuate) as distance to the source increases according to the inverse square rule, where the sound energy decreases with the square of the distance. As such, individual decibel ratings for different noise sources cannot be added directly to give the decibel rating of the combination of these sources. Two noise sources producing equal dB ratings at a given location will produce a composite noise level 3 dB greater than either sound alone. When two noise sources differ by 10 dB, the composite noise level will be only 0.4 dB greater than the louder source alone. Most people have difficulty distinguishing the louder of two noise sources that differ by less than 1.5 to 2 dB. In general, a 10 dB increase in noise level is perceived as a doubling in loudness. A 2 dB increase represents a 15 percent increase in loudness, a 3 dB increase is a 23 percent increase in loudness, and a 5 dB increase is a 41 percent increase in loudness.

When distance is the only factor considered, sound levels from a ground-level stationary or point source will typically decrease by about 6 dB for every doubling of distance away from the noise source. For a noise source which is relatively long, such as a constant stream of highway traffic (line source), noise levels decrease by about 3 dB for every doubling of distance.

3.12.1 Applicable Plans, Policies, and Regulations

Various federal, state, and local agencies have developed guidelines for evaluating land use compatibility under different noise level ranges. The federal Noise Control Act of 1972 (Public Law 92-574) established a requirement that all federal agencies must administer their programs in a manner that promotes an environment free from noise that jeopardizes public health or welfare. The United States Environmental Protection Agency (USEPA) was given the responsibility for: providing information to the public regarding identifiable effects of noise on public health or welfare, publishing information on the levels of environmental noise that will protect the public health and welfare with an adequate margin of safety, coordinating federal research and activities related to noise control, and establishing federal noise emission standards for selected products distributed in interstate commerce. The federal Noise Control Act also directed all federal agencies to comply with applicable federal, State, interstate, and local noise control regulations to the same extent that any person is subject to such requirements.

Although the USEPA was given major public information and federal agency coordination roles, each federal agency retains authority to adopt noise regulations pertaining to agency programs. The USEPA can require other federal agencies to justify their noise regulations in terms of the federal Noise Control Act policy requirements, but has no authority to approve or disapprove the noise regulations and policies of other federal agencies. The Occupational Safety and Health Administration has primary authority for setting workplace noise exposure standards. Due to aviation safety considerations, the Federal Aviation Administration has primary jurisdiction over aircraft noise standards.

Federal Criteria and Standards

USEPA. In response to the requirements of the federal Noise Control Act, the USEPA (1974) recommended indoor and outdoor noise limits to protect public health and welfare (hearing damage, sleep disturbance, and communication disruption). Outdoor Ldn values of 55 dB and

indoor Ldn values of 45 dB are identified as desirable to protect against speech interference and sleep disturbance for residential, educational, and health care areas. Noise level criteria to protect against hearing damage in commercial and industrial areas are identified as 24-hour Leq values of 70 dB (both outdoors and indoors).

National Park Service. The National Park Service's (NPS) "Management Policies 2006: The Guide to Managing the National Park System" (NPS Management Policies) provides policies "intended only to improve the internal management of the National Park Service" (NPS 2006). This document includes policies on "Soundscape Management" (NPS 2006 – Section 4.9), which state that "[t]he National Park Service will preserve, to the greatest extent possible, the natural soundscapes of parks" and "will restore to the natural condition wherever possible those park soundscapes that have become degraded by unnatural sounds (noise), and will protect natural soundscapes from unacceptable impacts." The process by which the NPS will preserve includes "[u]sing appropriate management planning, superintendents will identify what levels and types of unnatural sound constitute acceptable impacts on park natural soundscapes…The Service will take action to prevent or minimize all noise that through frequency, magnitude, or duration adversely affects the natural soundscape or other park resources or values, or that exceeds levels that have been identified through monitoring as being acceptable to or appropriate for visitor uses at the sites being monitored."

Under Section 8.2.3, "Use of Motorized Equipment", the NPS Management Policies state that "[t]he Service will strive to preserve or restore the natural quiet and natural sounds associated with the physical and biological resources of parks. To do this, superintendents will carefully evaluate and manage how, when, and where motorized equipment is used by all who operate equipment in the parks, including park staff." The policy defines the natural ambient sound level as "the environment of sound that exists in the absence of human-caused noise—is the baseline condition, and the standard against which current conditions in a soundscape will be measured and evaluated." (NPS 2006)

State Criteria and Standards

The California Governor's Office of Planning and Research (OPR 2003) has published guidelines for the noise element of local general plans. These guidelines include a noise level/land use compatibility chart that categorizes outdoor CNEL/Ldn levels into as many as four compatibility categories (normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable), depending on land use. For many land uses, the chart shows overlapping CNEL/Ldn ranges for two or more compatibility categories.

The noise element guidelines chart identifies the normally acceptable range for low density residential uses as CNEL/Ldn values less than 60 dB, while the conditionally acceptable range is 55 to 70 dB. The normally acceptable range for high density residential uses is identified as CNEL/Ldn values below 65 dB, while the conditionally acceptable range is identified as 60 to 70 dB. For educational and medical facilities, CNEL/Ldn values below 70 dB are considered normally acceptable, while values of 60 to 70 dB are considered conditionally acceptable. For office and commercial land uses, CNEL/Ldn values below 70 dB are considered normally acceptable, while values of 67.5 to 77.5 dB are categorized as conditionally acceptable. The overlapping CNEL/Ldn ranges are intended to indicate that local conditions (existing noise levels and community attitudes toward dominant noise sources) should be considered in evaluating land use compatibility at specific locations.

Local Criteria and Standards

Cities and counties in California are required to adopt a noise element as part of their general plans. Many cities and counties have incorporated the California Department of Health Services land use compatibility guidelines as a key item in the general plan noise element, and this forms the basis for the land use compatibility guidelines adopted by Riverside County. In addition to local general plan noise elements, some cities and counties have adopted noise ordinances to legally define noise nuisances. Local noise ordinances vary considerably in their format and coverage. Many noise ordinances establish property line performance standards for different land use or zoning categories. There is considerable variation among communities as to the types of noise sources covered under local noise ordinances.

The Noise Element of the Riverside County General Plan (Riverside County 2003) identifies noise-sensitive land uses to include:

- Residential uses,
- Schools,
- Hospitals,
- Rest homes,
- Long-term care facilities,
- Mental care facilities,
- Libraries,
- Places of worship, and
- Passive recreation uses.

Riverside County has adopted the land use compatibility criteria summarized in Table 3.12-2 as part of the Noise Element of the County General Plan.

Table 3.12-2. Riverside County Land Use Compatibility Standards

	CNEL or Ldn Noise Level			
Land Use	Normally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable
Low density residential (single family, duplex, mobile homes)	Up to 60 dBA	55–70 dBA	70–75 dBA	Over 75 dBA
Multiple-family residential	Up to 65 dBA	60–70 dBA	70–75 dBA	Over 75 dBA
Transient lodgings (motels and hotels)	Up to 65 dBA	60–70 dBA	70–80 dBA	Over 80 dBA
Schools, libraries, churches, hospitals, nursing homes	Up to 70 dBA	60–70 dBA	70–80 dBA	Over 80 dBA
Auditoriums, concert halls, amphitheaters	Category not used	Up to 70 dBA	Over 65 dBA	Category not used
Sports arenas, outdoor spectator sports	Category not used	Up to 75 dBA	Over 70 dBA	Category not used
Playgrounds, neighborhood parks	Up to 70 dBA	Category not used	67.5–75 dBA	Over 72.5 dBA
Golf courses, riding stables, water recreation, cemeteries	Up to 75 dBA	Category not used	70–80 dBA	Over 80 dBA
Office buildings, business commercial, professional	Up to 70 dBA	67.5–77.5 dBA	Category not used	Over 75 dBA
Industrial, manufacturing, utilities, agriculture	Up to 75 dBA	70 – 80 dBA	Category not used	Over 75 dBA

Source: Riverside County 2003 – Table N-1.

The Noise Element of the County General Plan includes numerous policies intended to minimize noise-related conflicts between adjacent types of land uses. These policies include the following:

- Discourage noise-sensitive land uses from being located in areas exposed to CNEL levels above 65 dBA;
- Guide noise-tolerant land uses into areas committed to land uses that are noise-producing, such as transportation corridors or areas adjacent to airports;
- Minimize noise spillover or encroachment from commercial and industrial land uses into adjoining residential neighborhoods or noise-sensitive areas;
- Discourage projects that cannot successfully mitigate excessive noise;
- Require commercial or industrial truck delivery hours to be limited when next to noise-sensitive land uses unless there is no feasible alternative or there are overriding transportation benefits;
- New land use development within Airport Influence Areas should comply with airport land use noise compatibility criteria contained in the applicable airport land use compatibility plan;
- Require development that generates increased traffic and subsequent increases in ambient noise level adjacent to noise-sensitive land uses to provide for appropriate mitigation measures;
- Ensure that construction activities are regulated to establish hours of operation in order to prevent or mitigate the generation of excessive or adverse noise impacts on surrounding areas;
- Require that all construction equipment utilize noise reduction features (such as mufflers and engine shrouds) that are no less effective than those originally installed by the manufacturer; and
- Consider the issue of adjacent residential land uses when designing and configuring all new non-residential development. Design and configure on-site ingress and egress points to divert traffic away from nearby noise-sensitive land uses to the greatest degree practicable.

The Noise Element of the County General Plan also identifies preferred noise standards for stationary noise sources that affect residential land uses (Table 3.12-3).

Table 3.12-3. Stationary Source Land Use Noise Standards

Land Use	Time of Day	Interior Noise Standard	Exterior Noise Standard
Residential	7:00 a.m. to 10:00 p.m.	55 dBA, 10-minute Leq	65 dBA, 10-minute Leq
Residential	10:00 p.m. to 7:00 a.m.	40 dBA, 10-minute Leq	45 dBA, 10-minute Leq

Note: The Riverside County Planning Department and Riverside County Office of Public Health have administrative discretion regarding application of these standards.
Source: Riverside County 2003 – Table N-2.

Riverside County has adopted a noise ordinance (Ordinance No. 847) to regulate noise sources on one property that may impact adjacent properties. The noise ordinance sets general noise standards according to the land use designation of the affected property. Table 3.12-4 summarizes the basic noise standards in Riverside County Ordinance No. 847, as amended.

Table 3.12-4. Noise Limits in Riverside County Noise Ordinance 847, dB Lmax

Impacted Land Use	General Plan Designations	Noise Standard 7:00 a.m. to 10:00 p.m.	Noise Standard 10:00 p.m. to 7:00 a.m.
Rural residential	RR, RM, RD	45 dBA	45 dBA
Community residential	EDR, VLDR, LDR, MDR, MHDR, HDR, VHDR, HTDR, SP (Residential)	55 dBA	45 dBA
Commercial and office	CR, CO, CT, CC, SP (Commercial)	65 dBA	55 dBA
Business park	BP	65 dBA	45 dBA
Light industrial	LI, SP (Light Industrial)	75 dBA	55 dBA
Heavy industrial	HI, SP (Heavy Industrial)	75 dBA	75 dBA
Public facility	PF	65 dBA	45 dBA
Agriculture	AG	45 dBA	45 dBA
Open space	C, CH, REC, RUR, W	45 dBA	45 dBA
Mineral resources	MR	75 dBA	45 dBA

Source: Riverside County 2007 – Table 1.

The Riverside County noise ordinance also includes special provisions related to sound amplification systems, live music, audio equipment, and power tools. The noise ordinance also provides for exceptions from the general and special noise standard provisions. In addition, the following facilities and activities are exempt from the provisions of the noise ordinance:

- Facilities owned or operated by government agencies;
- Capital improvement projects of government agencies;
- Maintenance and repair of public properties;
- Public safety personnel and their equipment in the course of conducting their official duties;
- Agricultural operations conducted on lands designated agricultural in the General Plan or on lands zoned A-1 (Light Agriculture), A-P (Light Agriculture with Poultry), A-2 (Heavy Agriculture), A-D (Agriculture-Dairy), or C/V (Citrus/Vineyard) provided those operations are carried out in a manner consistent with accepted industry standards;
- Wind energy conservation systems provided that they comply with Riverside County Ordinance No. 348;
- Private construction projects located a quarter mile or more from the nearest inhabited dwelling;
- Private construction projects located within a quarter mile of an inhabited dwelling provided that construction activities are limited to 6:00 a.m. to 6:00 p.m. during the months of June through September and are limited to 7:00 a.m. to 6:00 p.m. during the months of October through May;
- Property maintenance, including the use of mowers, leaf blowers, etc. provided that such activity is limited to the hours of 7:00 a.m. to 8:00 p.m.;
- Motor vehicles other than off-highway vehicles, but this exemption does not apply to motor vehicle sound systems; and
- The discharge of firearms in compliance with all State laws.

Vibration

Ground-borne vibrations can be a source of annoyance to people or a source of structural damage to some types of buildings. Although vibration measurements can be presented in many different forms, peak particle velocity (PPV) is the unit of measure used most often to assess building damage potential. The California Department of Transportation (Caltrans) has identified vibration impact criteria for both building damage potential and human annoyance (Caltrans 2002 and 2004). Both human annoyance effects and building damage effects depend in part on whether vibration events are isolated, discrete events or a relatively continuous episode of vibrations. In general, there is less sensitivity to single, discrete events than to continuous events or frequently repeated discrete events. Table 3.12-5 summarizes Caltrans criteria for assessing the effects of ground-borne vibration.

Table 3.12-5. Summary of Caltrans Vibration Criteria

Type of Criteria	Threshold Condition	Peak Particle Velocity, inches/second	
		Transient Sources	Continuous or Frequent Sources
Human Response	Barely perceptible	0.04	0.01
	Distinctly perceptible	0.25	0.04
	Strongly perceptible; may be annoying to some people in buildings	0.9	0.10
	Severe; unpleasant for people in buildings; unacceptable to pedestrians on bridges	2.0	0.4
Building Damage	Cosmetic damage threshold for extremely fragile historic buildings, ruins, and ancient monuments	0.12	0.08
	Cosmetic damage threshold for fragile buildings	0.2	0.1
	Cosmetic damage threshold for historic and some old buildings	0.5	0.25
	Cosmetic damage threshold for older residential structures	0.5	0.3
	Cosmetic damage threshold for newer residential structures	1.0	0.5
	Cosmetic damage threshold for modern industrial/commercial buildings	2.0	0.5

Source: Caltrans 2004 – Tables 19 and 20; Caltrans 2002 – Table 2.

The Noise Element of the Riverside County General Plan includes consideration of ground-borne vibrations. The following land uses are identified by the noise element as being vibration sensitive:

- Hospitals,
- Residential areas,
- Concert halls,
- Libraries,
- Sensitive research operations,
- Schools, and
- Offices.

Riverside County General Plan policies related to vibration include the following:

- Restrict the placement of sensitive land uses in proximity to vibration-producing land uses, and
- Prohibit the exposure of residential dwellings to ground vibration from passing trains that would be perceptible on the ground or second floors (vibrations are presumed to be perceptible if they exceed a peak particle velocity of 0.01 inch per second over a range of 1 to 100 Hz).

3.12.2 Existing Conditions

Noise

Existing noise sources near the proposed project site include local roadway traffic, off-highway recreational vehicle use, agricultural operations, aircraft overflights, private landing strips, traffic on I-10, noise from the preliminary construction of the proposed project or its alternatives, and aerodynamic noise from wind blowing through vegetation or around structures. The environmental baseline for the proposed project and alternatives includes only the preliminary construction of the Desert Sunlight Solar Farm project that had been completed as of September 2011. Ambient noise levels have not been measured in the vicinity of the proposed project; however, based on general land use conditions and the remote nature of the area, existing background noise levels would be expected to vary from 35 to 50 dBA during the daytime and to drop to 25 to 35 dBA at night. The ambient noise levels are conservative as there is ongoing construction work associated with the Desert Sunlight project which would have the potential to increase ambient noise levels. Somewhat higher noise levels would occur in proximity to I-10, along the gen-tie alternative routes. At distances of more than a few hundred feet from I-10, existing CNEL levels would be about 45 dBA.

Figure 3.12-1 in Appendix A illustrates the locations of existing noise-sensitive land uses. Locations of existing noise-sensitive land uses in the project area include homes along Kaiser Road, Beekley Road, and SR-177; homes in Eagle Mountain Village; Eagle Mountain Elementary School at Eagle Mountain Village; the Lake Tamarisk development; and homes in Desert Center. The closest occupied residence is about 6,500 feet (1.24 miles) east-southeast of the property line. A home site is located 1,320 feet (0.25 miles) from the property line of the solar facility site; however, this site is not currently in use. All other nearby homes are about 7,800 feet (1.48 miles) or farther from the project property line. JTNP encompasses the project area, and is located 1.8 miles to the northeast, 3.5 miles to the west, and over 7 miles to the north (see Figure 3.12-1 in Appendix A). Along the proposed gen-tie Alternatives B and C, the closest residence is located approximately 500 feet east of the line in the Lake Tamarisk development. For Alternative D: Cross-Valley Alignment, the closest residence is 1,450 feet southwest of the gen-tie line along Rice Road/SR-177. For Alternative E: New Cross-Valley Alignment, the closest residence is 900 feet northeast of the gen-tie line, also along Rice Road/SR-177.

Existing background noise levels near the solar facility site are expected to be low, with typical daytime noise levels of 35 to 50 dBA. Background noise levels would be higher during periods of strong winds.

Vibration

There are no identifiable sources of significant ground-borne vibrations in the project vicinity. Traffic on I-10 and SR-177 produce low levels of vibration, but those vibrations would dissipate very rapidly to imperceptible levels at the project locations, except for transmission structures within close proximity of these highways. All of the noise-sensitive land uses discussed above are also considered vibration-sensitive.

3.13 PUBLIC HEALTH AND SAFETY

This section describes existing environmental and regulatory settings associated with public health and safety as they relate to the proposed project and alternatives. The project study area includes the vicinity of the solar facility site and gen-tie line alternatives, including all areas where potential hazards introduced by construction, operation, and decommissioning of the Desert Harvest Solar Project (DHSP) could affect public health and safety.

3.13.1 Applicable Plans, Policies, and Regulations

The following section provides a summary of the federal, state, and local regulatory framework and the laws, regulations, and standards that govern hazards, health and safety in the DHSP area.

Federal

Hazardous Materials Transportation Act (49 USC § 5101 et seq.)

The U.S. Department of Transportation has regulatory authority for the safe transportation of hazardous materials under the Hazardous Materials Transportation Act, as amended and codified in 49 United States Code (USC) 5101 et seq. Vehicles transporting hazardous materials must comply with strict containment, safety, labeling and manifesting requirements.

Resource Conservation and Recovery Act (42 USC. § 6901 et seq.)

The Resource Conservation and Recovery Act (RCRA) of 1976 establishes a program administered by the U.S. Environmental Protection Agency (USEPA) for the regulation of the generation, transportation, treatment, storage and disposal of hazardous waste. RCRA was amended in 1984 by the Hazardous and Solid Waste Act, which affirmed and extended the "cradle to grave" system of regulating hazardous waste. The use of certain techniques for the disposal of some hazardous wastes was specifically prohibited by the Hazardous and Solid Waste Act. RCRA regulates hazardous waste from the time that the waste is generated, through to its management, storage, transport, and treatment until its final disposal. In California, the EPA has authorized the Department of Toxic Substance Control (DTSC) to administer the RCRA program, pursuant to the State's Hazardous Waste Control Law.

Comprehensive Environmental Response, Compensation, and Liability Act (Superfund) of 1980 (42 USC. § 9601 et seq.)

The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) provides a federal Superfund to clean up uncontrolled or abandoned hazardous waste sites as well as accidents, spills and other emergency releases of pollutants and contaminants into the environment. The USEPA administers CERCLA. This law provides broad federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment.

Superfund Amendments and Reauthorization Act of 1986 (Title III 40 CFR§ 68.110 et seq.)

The Superfund Amendments and Reauthorization Act amended CERCLA and established a nationwide emergency planning and response program, and imposed reporting requirements for businesses that store, handle or produce significant quantities of extremely hazardous materials. Administered by the USEPA, the act requires states to implement a comprehensive system to

inform local agencies and the public when a significant quantity of such materials is stored or handled at a facility. Additionally, the Superfund Amendments and Reauthorization Act identifies requirements for planning, reporting, and notification concerning hazardous materials.

Oil Pollution Prevention (40 CFR Part 112)

The goal of the oil pollution prevention regulation in 40 Code of Federal Regulations Part 112 is to prevent oil discharges from reaching navigable waters of the United States or adjoining shorelines. Facilities that could reasonably be expected to discharge oil into navigable waters in quantities that may be harmful are required to develop and implement Spill Prevention, Control and Countermeasures (SPCC) plans per the SPCC rule.

Occupational Safety and Health Administration

The Occupational Safety and Health Administration administers health standards that (1) provide regulations for safety in the workplace; (2) regulate construction safety; and (3) require a Hazards Communication Plan. The plan includes identification and inventory of all hazardous materials for which Material Safety Data Sheets would be maintained, and employee training in safe handling of said materials.

State of California

California Environmental Protection Agency

The California Environmental Protection Agency (Cal EPA) unifies California's environmental authority, consolidating the California Air Resources Board (CARB), State Water Resources Control Board (SWRCB), Regional Water Quality Control Board (RWQCB), Integrated Waste Management Board, the DTSC, Office of Environmental Health Hazard Assessment, and the Department of Pesticide Regulation under one agency. The California Hazardous Waste Control Law is administered by Cal EPA's DTSC.

Department of Toxic Substance Control

The DTSC is the primary agency in California that regulates hazardous waste, administers cleanups of existing contamination, and looks for ways to reduce hazardous waste produced in California. The DTSC regulates hazardous waste in California primarily under the authority of RCRA and the California Health and Safety Code. The DTSC manages, maintains and monitors the Cortese list of hazardous waste sites. The Cortese list, or Hazardous Waste and Substances Sites List, is a planning resource used by the state, local agencies, and developers to comply with CEQA requirements in providing information about the location of hazardous materials release sites.

California Emergency Management Agency

The California Emergency Management Agency was formed January 1, 2009 as a result of a merger between the Governor's Office of Emergency Services and the Office of Homeland Security. The Hazardous Materials Unit of the California Emergency Management Agency is responsible for hazardous materials emergency planning and response, spill release notifications, and hazardous materials enforcement of the Unified Program. The Office of Emergency Services provides emergency response services in support of local jurisdictions.

Riverside County

County of Riverside Department of Environmental Health

The County of Riverside Department of Environmental Health (DEH) acts as the Certified Unified Program Agency (CUPA) for Riverside County and is responsible for reviewing Hazardous Materials Business Plans. A CUPA is a local agency that has been certified by Cal EPA to implement state environmental programs related to hazardous materials and waste. The DEH is responsible for protecting the health and safety of the public and the environment of Riverside County by assuring that hazardous materials are properly handled and stored. The DEH accomplishes this through inspection, emergency response, site remediation and hazardous waste management services. The specific responsibilities of the DEH include the following:

- Inspecting hazardous material handlers and hazardous waste generators to ensure full compliance with laws and regulations.
- Implementing CUPA programs for the development of accident prevention and emergency plans, proper installation, monitoring, and closure of underground storage tanks and the handling, storage and transportation and disposal of hazardous wastes.
- Providing 24-hour response to emergency incidents involving hazardous materials or wastes in order to protect the public and the environment from accidental releases and illegal activities.
- Overseeing the investigation and remediation of environmental contamination due to releases from underground storage tanks, hazardous waste containers, chemical processes or the transportation of hazardous materials.

Conducting investigations and taking enforcement action as necessary against anyone who disposes of hazardous waste illegally or otherwise manages hazardous materials or wastes in violation of federal, state or local laws and regulations.

3.13.2 Existing Conditions

This section contains a description of the environmental setting for the proposed project and alternatives with respect to hazardous materials and public health and safety issues that may exist in the project area. The setting for hazardous wastes is described in Section 3.21. The following issues are addressed in this section: existing hazardous materials/hazardous waste in the area, proximity to airports and schools, emergency evacuation routes, emergency response plans, intentionally destructive acts, and electromagnetic fields (EMF).

The DHSP is proposed in an area that has a variety of uses including open space recreation and preserve, residential housing, and commercial businesses. There are no hazardous materials generators or hazardous waste generators within the areas where the proposed project or alternatives would be located.

Existing Hazardous Materials/Waste

Existing and past land use activities are potential indicators of hazardous materials and hazardous waste storage and use. The primary reasons to define potentially hazardous sites are to protect the health and safety of construction and operations personnel and to minimize public exposure to hazardous materials during construction and waste handling.

The following is a summary definition of hazardous materials and hazardous waste.

- Hazardous Material: Any material that due to its quantity, concentration or physical characteristics poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or environment.
- Hazardous Waste: A waste or combination of wastes, which due to its quantity, concentration or physical, chemical, or infectious characteristics, may cause or significantly contribute to an increase in mortality or an increase in serious irreversible or incapacitating but reversible illness; or pose a substantial present or potential hazard to human health or the environment due to factors including, but not limited to carcinogenicity, acute toxicity, chronic toxicity, bioaccumulative properties or persistence in the environment when improperly treated, stored, transported, or disposed of or otherwise managed.

Database Review

A hazardous materials storage and contaminated sites database search was conducted for the project study area in 2010 as a part of the EIS for the Desert Sunlight Solar Farm (DSSF) project, located immediately adjacent to the DHSP and within the proposed project study area (BLM 2011; incorporated by reference in Section 1.11). According to the records search, seven entries were recorded on the Emergency Response Notification Systems list for spills near to the proposed project and its alternatives. These spills were identified along I-10. None of these spills were identified as needing additional remediation after initial cleanup activities.

Two additional sites were identified as permitted facilities. A sanitary landfill, listed as the Desert Center Sanitary site (17-991 Kaiser Road), was listed as a permitted Solid Waste Landfill site that accepts agricultural, construction/demolition and mixed municipal waste by the County of Riverside Waste Management Department. The second permitted site is the Iron Mountain pumping station (6001 Iron Mountain Pumping Plant Road), which is also listed as a RCRA waste generator. An underground storage tank (UST) has also been associated with the Eagle Mountain pumping station. No violations or environmental actions for these sites were listed. One final site, the Eagle Mountain Mine, was listed as No Further Remedial Action Planned. No violations or environmental actions for this site were listed.

A number of listings in the area were listed as registered underground storage tanks (UST). No violations or environmental actions for these sites were identified. Two sites, also identified as UST sites, were listed on the Leaking Underground Storage Tank (LUST) list. The Caltrans Desert Center site (44740 Ragsdale Road) and the Metropolitan Water District Eagle Mountain Pumping Station (Eagle Mountain Road) were both listed as site closures with a no further action letter. No additional environmental actions were identified for either site.

Other Hazardous Waste Issues

A Phase I Environmental Site Assessment conducted for the adjacent DSSF project indicated that the DHSP project study area was possibly used historically as a military training facility and that there is some potential for munitions and explosives of concern to be present on site. Specifically a topographic map from 1947 indicated that the gen-tie line Alternative D traverses the southwest corner of a military reservation boundary (BLM 2011).

Airports

The former Desert Center Airport is located 2.7 miles southeast from the proposed solar facility boundary and less than a mile from gen-tie line Alternatives D and E. This airport is no longer in regular use but the site has been developed into a multi-use recreational facility, the Chuckwalla Valley Raceway, including an automotive race track facility with accessory buildings, dry (without utility hook-ups) on-site camping, and associated amenities. The redevelopment includes use of the runway as a private special-use airport (County of Riverside Redevelopment Agency 2009). There is also a private landing strip associated with the closed Eagle Mountain mine that is Redevelopment Agency 2009). There is also a private landing strip associated with the closed Eagle Mountain mine that is located 6.4 miles northwest of the proposed project site. This private airstrip is minimally used to access the closed Eagle Mountain mine.

Schools and Other Sensitive Receptors

There is one school in the vicinity of the solar facility site. Eagle Mountain Elementary School is located 5.3 miles from the northwestern boundary of the solar facility site. It supports kindergarten through eighth grade students. Eagle Mountain Elementary School is part of the Desert Center Unified School District.

A number of scattered rural residences occur in the project study area. Locations of sensitive residential receptors include homes along Kaiser Road, Beekley Road, and SR-177; homes in Eagle Mountain Village; the Lake Tamarisk development; and homes in Desert Center. The closest occupied residence is about 6,500 feet (1.24 miles) east-southeast of the property line. A home site is located 1,320 feet (0.25 miles) from the property line of the solar facility site; however, this residence is not currently in use and the house is unsuitable for occupation. All other nearby homes are about 7,800 feet (1.48 miles) or farther from the solar facility property line (see Figure 3.12-1 in Appendix A). Along gen-tie line Alternatives B and C, the closest residence is located approximately 500 feet east of the line in the Lake Tamarisk development. For Alternative D: Cross-Valley Alignment, the closest residence is 1,450 feet southwest of the gen-tie line along Rice Road/SR-177. For Alternative E: New Cross-Valley Alignment, the closest residence is 900 feet northeast of the gen-tie line, also along Rice Road/SR-177. Figure 3.12-1 in Appendix A illustrates the locations of noise-sensitive land uses.

Emergency Evacuation Routes

Emergency evacuation routes in the Desert Center region are I-10 and SR-177 (Rice Road). Further discussion of transportation routes is provided in Section 3.21.

Emergency Response Plan

The County of Riverside DEH acts as the CUPA for Riverside County. The CUPA program is designed to consolidate, coordinate, and administer permits, inspection activities, and enforcement activities throughout the County of Riverside. The programs administered by the CUPA are as follows:

- Business Emergency Plan/Hazardous Materials Handler;
- Hazardous Waste Generators;
- Underground Storage Tanks;

- California Accidental Release Program;
- Aboveground Petroleum Storage Act/SPCC Plan; and
- Uniform Fire Code Hazardous Materials Management Plans.

The Applicant and SCE will be required to complete emergency response plans as identified by the DEH as relevant to the construction and operation of the DHSP.

Electromagnetic Fields

EMF is a term used to describe electric and magnetic fields that are created by electric voltage (electric field) and electric current (magnetic field). Electromagnetic fields can be viewed as a combination of both an electric and magnetic field that can be regarded as a smooth, continuous field, propagating in a wavelike manner. Power frequency EMF is a natural consequence of electrical currents, and can be either directly measured using the appropriate measuring instruments or calculated using appropriate information.

Electric fields are present whenever voltage exists on a wire, and are not dependent on current. The magnitude of the electric field is primarily a function of the configuration and operation voltage of the line and decreases with the distance from the source. The electric field can be shielded (i.e., the strength can be reduced) by any conducting surface, such as trees, fences, walls, buildings, and most types of structures. The strength of an electric field is measured in volts per meter (V/m) or kilovolts per meter (kV/m). Typical electric field values for appliances are presented in Table 3.13-1.

Table 3.13-1. Typical Electric Field Values for Appliances, at 12 Inches

Appliance	Electric Field Strength (V/m)
Stereo Receiver	180
Iron	120
Refrigerator	120
Mixer	100
Toaster	80
Hair Dryer	80
Color TV	60
Coffee Machine	60
Vacuum Cleaner	50
Electric Oven	8
Light Bulb	5

Source: WHO 2011
* 1 to 10 kV/m next to blanket wires.
kV/m: Kilovolts/meter

Magnetic fields are present whenever current flows in a conductor, and are not dependent on voltage of the conductor. The strength of these fields also decreases with distance from the source. However, unlike electric fields, most common materials have little shielding effect on magnetic fields. Magnetic field strength is a function of both the current on the conductor and the design of the system. Magnetic fields are measured in units called Gauss. However, for low

levels normally encountered near electric utility facilities, the field strength is expressed in a much smaller unit, the milliGauss (mG), which is one thousandth of a Gauss.

Power frequency EMF is present whenever electricity is used. This includes not only electric power generation, utility transmission lines, distribution lines and on-site and off-site substations as proposed with the DHSP, but also the building wiring in homes, offices, schools and in the appliances and machinery used in these locations. Magnetic field intensities from these sources can range from below 1 mG to above 1,000 mG (1 Gauss).

Magnetic field levels from household appliances at several different distances are presented in Table 3.13-2.

Table 3.13-2. Magnetic Field from Household Appliances

	Magnetic Field (mG) at Distance of:		
Appliance	1.18 inches (3 cm)	11.81 inches (30 cm)	39.37 inches (1 m)
Hair dryer	60–20000	0.1–70	0.1–0.3
Electric shaver	150–15000	0.8–9	0.1–0.3
Vacuum cleaner	2000–8000	20–200	1.3–20
Fluorescent light	400–4000	5–20	0.2–2.5
Microwave oven	730–2000	40–80	2.5–6
Portable radio	160–560	10	< 0.1
Electric oven	10–500	1.5–5	0.1–0.4
Washing machine	8–500	1.5–30	0.1–1.5
Iron	80–300	1.2–3	0.1–0.3
Dishwasher	35–200	6–30	0.7–3
Computer	5–300	< 0.1	—
Refrigerator	5–17	0.1–2.5	< 0.1
Color TV	25–500	0.4–20	0.1–1.5

Source: WHO 2011.

As shown in Table 3.13-2, magnetic field strength diminishes with distance. Fields from compact sources (i.e., those containing coils such as small appliances and transformers) drop off with distance (r) from the source by a factor of $1/r^3$. For three-phase power lines with balanced currents, the magnetic field strength drops off at a rate of $1/r^2$. Fields from unbalanced currents, which flow in paths such as neutral or ground conductors, fall off inversely proportional to the distance from the source or 1/r. Conductor spacing and configuration also affect the rate at which the magnetic field strength decreases, as well as the presence of other sources of electricity.

EMF levels can be reduced in three primary ways: shielding, field cancellation or increasing the distance from the source. Shielding, which primarily reduces exposure to electric fields, can be actively accomplished by placing trees or other physical barriers adjacent to the EMF generating structure. Since electric fields can be blocked by most materials, shielding is effective for the electric fields but of limited effectiveness for magnetic fields.

Magnetic fields can be reduced by either cancellation or by increasing distance from the field. Cancellation is achieved in two ways. A transmission line circuit consists of three “phases”:

three separate wires (conductors) on a transmission tower. The configuration of these three conductors can reduce magnetic fields. When the configuration places the three conductors closer together, the interference or cancellation of the fields from each wire is enhanced. This technique has practical limitations because of the potential for short circuits if the wires are placed too close together. There are also worker safety issues to consider if spacing is reduced. In instances where there are two circuits (more than three phase wires), cancellation can be accomplished by arranging phase wires from different circuits near each other. The distance between the source of fields and the public can be increased by either placing the wires higher above ground, burying underground cables deeper, or by increasing the right-of-way. These methods can prove effective in reducing fields because the field strength drops rapidly with distance.

Regulation of EMFs

Because there are no state or federal guidelines or regulations related to electromagnetic fields, the state policy developed by the California Public Utilities Commission (CPUC) is summarized here (CPUC 2006). The CPUC has jurisdiction over investor-owned utilities, but not over solar generation projects or privately owned gen-tie lines.

On January 15, 1991, the CPUC initiated an investigation to consider its role in mitigating the health effects, if any, of EMF from electric utility facilities and power lines. A working group of interested parties, called the California Electromagnetic Frequency Consensus Group, was created by the CPUC to advise it on this issue. The group consisted of stakeholders representing citizens groups, consumer groups, environmental groups, stakeholder agencies, unions and utilities. Based on the work of the Consensus Group, written testimony and evidentiary hearings, the CPUC issued its decision (93-11-013) on November 2, 1993, to address public concerns about possible EMF health effects from electric utility facilities.

In response to a situation of scientific uncertainty and public concerns, the decision specifically required the investor-owned utilities to consider “no-cost” and “low-cost” measures, where feasible, to reduce exposure from new or upgraded utility facilities requiring certification under General Order 131-D. It directs that no-cost mitigation measures be undertaken, and that low-cost options, when they meet certain guidelines for field reduction and cost, are adopted through the project certification process. The decision directed the investor-owned utilities to use a 4 percent benchmark on the low-cost mitigation. These reduction measures would be documented in a project-specific Field Management Plan. The CPUC did not adopt any specific numerical limits or regulations on EMF levels related to electric power facilities.

In Decision D.93 11 013, the CPUC addressed mitigation of EMF of utility facilities and implemented the following recommendations for investor-owned utilities:

- No-cost and low-cost steps to reduce EMF levels;
- Workshops to develop EMF design guidelines;
- Uniform residential and workplace programs;
- Stakeholder and public involvement;
- A four-year education program;
- A four-year nonexperimental and administrative research program; and
- An authorization of federal experimental research conducted under the National Energy Policy Act of 1992.

Most recently the CPUC issued Decision D.06 01 042, on January 26, 2006, affirming the low-cost/no-cost policy to mitigate EMF frequency exposure from new utility transmission and substation projects. This decision also adopted rules and policies to improve utility design guidelines for reducing EMF. The CPUC stated: "At this time we are unable to determine whether there is a significant scientifically verifiable relationship between EMF exposure and negative health consequences."

The CPUC has not implemented a general requirement that utilities include nonroutine mitigation measures or other mitigation measures that are based on numeric values of EMF exposure and has not adopted any specific limits or regulation on EMF related to electric power facilities. Mitigation measures may be determined for utility projects on a project-by-project basis by the CPUC.

Other Concerns Related to Electric and Magnetic Fields

Additional concerns regarding EMF related to power line fields include radio, television, electronic equipment interference, induced currents and shock hazards, and effects on cardiac pacemakers. Each of these issues is described below.

Radio/Television/Electronic Equipment Interference

Although corona can generate high frequency energy that may interfere with broadcast signals or electronic equipment, this is generally not a problem for transmission lines. Corona is a process by which a current, perhaps sustained, develops from an electrode with a high potential in a neutral fluid, usually air, by ionizing that fluid to create a plasma around the electrode.

Gap discharges or arcs can also be a source of high frequency energy. Gap discharges occur when an arc forms across a gap in loose or worn line hardware. It is estimated that over 90 percent of interference problems for electric transmission lines are due to gap discharges. Line hardware is designed to be problem-free, but wind motion, corrosion, and other factors can create a gap discharge condition. When identified, gap discharges can be located and remedied by utilities.

Electric fields from power lines do not typically pose interference problems for electronic equipment in businesses since the equipment is shielded by buildings and walls. However, magnetic fields can penetrate buildings and walls, thereby interacting with electronic equipment. Depending on the sensitivity of equipment, the magnetic fields can interfere with operation. Review of this phenomenon in regard to the sensitivity of electrical equipment identifies a number of thresholds for magnetic field interference. Interference with typical computer monitors can be detected at magnetic field levels of 10 mG and above, while large screen or high-resolution monitors can be susceptible to interference at levels as low as 5 mG.

Other specialized equipment, such as medical or testing equipment, can be sensitive at levels below 5 mG. Equipment that may be susceptible to very low magnetic field strengths is typically installed in specialized and controlled environments, since even building wiring, lights, and other equipment can generate magnetic fields of 5 mG or higher.

The most common electronic equipment that can be susceptible to magnetic field interference is probably computer monitors. Magnetic field interference results in disturbances to the image displayed on the monitor, often described as screen distortion, "jitter," or other visual defects. In most cases it is annoying, and at its worst, it can prevent use of the monitor. This type of inter-

ference is a recognized problem in the video monitor industry. As a result, there are manufacturers who specialize in monitor interference solutions and shielding equipment. Possible solutions to this problem include relocating the monitor, using magnetic shield enclosures, installing software programs, and replacing cathode ray tube monitors with liquid crystal displays that are not susceptible to magnetic field interference.

Induced Currents and Shock Hazards

Power line fields can induce voltages and currents on conductive objects, such as metal roofs or buildings, fences, and vehicles. When a person or animal comes in contact with a conductive object, a perceptible current or small secondary shock may occur. Secondary shocks cause no physiological harm, but they may present a nuisance.

Cardiac Pacemakers

An area of concern related to electric fields from transmission lines has been the possibility of interference with cardiac pacemakers. There are two general types of pacemakers: asynchronous and synchronous. The asynchronous pacemaker pulses at a predetermined rate. It is generally immune to interference because it has no sensing circuitry and is not exceptionally complex. The synchronous pacemaker, however, pulses only when its sensing circuitry determines that pacing is necessary. Interference from transmission line electric field may cause a spurious signal on the pacemaker's sensing circuitry. However, when these pacemakers detect a spurious signal, such as a 60 Hertz (Hz) signal, they are programmed to revert to an asynchronous or fixed pacing mode of operation, returning to synchronous operation within a specified time after the signal is no longer detected. Cardiovascular specialists do not consider prolonged asynchronous pacing a problem, since some pacemakers are designed to operate that way. Periods of operation in this mode are commonly induced by cardiologists to check pacemaker performance. So, while transmission line electric fields may interfere with the normal operation of some of the older model pacemakers, the result of the interference is generally not harmful and is of short duration (Illinois Institute of Technology Research Institute 1979; University of Rochester 1985).

EMF Associated with the DHSP Location

The project study area has minimal rural residential development. The nearest residences to the proposed project site and the gen-tie line alternatives are shown in Figure 3.12-1 in Appendix A. In undeveloped and natural areas, measurable EMFs are not present except in the vicinity of existing power lines. Public exposure to EMF in undeveloped areas is limited, primarily due to the absence of receptors (people).

There are currently several sources of EMF within the project study area, including a 161-kV and 230-kV Metropolitan Water District transmission line and a 33-kV Kaiser Ventures power line. The 161-kV transmission line bisects the proposed solar facility.

3.14 RECREATION

This section describes the existing recreational uses that could be affected by the implementation of proposed project and alternatives. The project study area for recreation encompasses all areas in the vicinity of the proposed project and alternatives that could be affected by construction, operation, and decommissioning of the Desert Harvest Solar Project (DHSP); this includes recreational areas from which the project would be visible. The environmental baseline for the DHSP includes the preliminary construction of the Desert Sunlight Solar Farm project (all construction that was complete up to and including September 2011).

3.14.1 Applicable Plans, Policies, and Regulations

The following federal, state, and local laws and policies apply to the administration of recreation within the project study area.

Wilderness Act of 1964

The Wilderness Act, signed into law in 1964, created the National Wilderness Preservation System and recognized wilderness as “an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain.” The Act further defined wilderness as "an area of undeveloped Federal land retaining its primeval character and influence without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions. . . ."

Designated wilderness is the highest level of conservation protection for federal lands. Only Congress may designate wilderness or change the status of wilderness areas. Wilderness areas are designated within existing federal public land. Congress has directed four federal land management agencies — U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service, and National Park Service — to manage wilderness areas so as to preserve and, where possible, to restore their wilderness character.

The Wilderness Act prohibits permanent roads and commercial enterprises, except commercial services that may provide for recreational or other purposes of the Wilderness Act. Wilderness areas generally do not allow motorized equipment, motor vehicles, mechanical transport, temporary roads, permanent structures or installations (with exceptions in Alaska). Wilderness areas are to be primarily affected by the forces of nature, though the Wilderness Act does acknowledge the need to provide for human health and safety, protect private property, control insect infestations, and fight fires within the area. Wilderness areas are managed under the direction of the Wilderness Act, subsequent legislation (such as the Alaska National Interest Lands Conservation Act), and agency policy. The Joshua Tree Wilderness Area occurs along the border of JTNP closest to the proposed project and alternatives, approximately 2 miles northeast of the northeastern boundary of the proposed solar facility, see Figure 2-1. The BLM Palen/McCoy Wilderness is located approximately 10 miles east of the proposed solar facility.

Federal Land Policy and Management Act (FLPMA)

FLPMA recognizes the value of public lands and includes the multiple use/sustained yield framework for management to provide for outdoor recreation for future generations (BLM 2001). Title VI of FLPMA, *Designated Management Areas, California Desert Conservation Area*, acknowledges the recreational resources contained within the California desert environment and

directs the BLM to develop a multiple use and sustained yield management plan to conserve the desert's resources, particularly recreational use. The solar facility site is governed by these pieces of legislation, and its various alternatives would impact the recreational opportunities available in the vicinity.

California Desert Conservation Area (CDCA) Plan

The CDCA Plan defines Multiple-Use Classes for all BLM-managed lands, which includes the lands within the project study area. The CDCA Plan establishes goals for management of recreation in the California Desert (BLM 1980). As with the FLPMA, recreational opportunities in the project study area are framed by the CDCA Plan. The goals are to provide for the use of the public lands and resources of the CDCA, including recreational uses, in a manner that enhances wherever possible — and that does not diminish — the environmental, cultural, and aesthetic values of the desert (BLM 1980). The goals of the Recreation Element of the plan are to:

- Provide for a wide range of quality recreation opportunities and experiences emphasizing dispersed undeveloped use;
- Provide a minimum of recreation facilities. Those facilities should emphasize resource protection and visitor safety;
- Manage recreation use to minimize user conflicts, provide a safe recreation environment, and protect desert resources;
- Emphasize the use of public information and education techniques to increase public awareness, enjoyment, and sensitivity to desert resources;
- Adjust management approach to accommodate changing visitor use patterns and preferences; and
- Encourage the use and enjoyment of desert recreation opportunities by special populations, and provide facilities to meet the needs of those groups.

Areas of Critical Environmental Concern (ACECs) are also identified as special management areas in the CDCA Plan. These include areas where special management attention is required to protect important historic, cultural, scenic, biological, or other natural resources. The Desert Lily ACEC is located 2.4 miles southeast of the site for all of the solar facility alternatives and 0.5 mile north of a portion of gen-tie Alternative E. The Alligator Rock ACEC is located south of Desert Center and within one mile of a portion of gen-tie Alternatives B and C.

The CDCA Plan also contains a motorized-vehicle access element, which provides a system and a set of rules that governs access to the CDCA by motor vehicles. The rules include providing for constrained motor-vehicle access, while protecting desert resources (BLM 1980). When the CDCA Plan was first adopted, the BLM designated a network of motorized vehicle routes on public lands within the northern and eastern Mojave Desert. The BLM designated routes for north-central and southern portions of the CDCA. The BLM manages OHV use, so the conditions of special status species and other natural and cultural resources are maintained (BLM 2011). There are no designated OHV routes in the solar facility area or gen-tie alternative routes.

Northern and Eastern Colorado Desert Coordinated Management Plan

The NECO Plan, an amendment to the CDCA Plan, provides for management of recreation within the California Desert area of El Centro, Blythe, Needles, and cities in the Coachella Valley, including the project study area (BLM 2011). The NECO Plan specifies the types of recreational activities allowed in Multiple-Use Classes on BLM-administered land. Under this plan, new routes may be allowed if approved by the authorized officer. All competitive and organized events having 50 or more vehicles require permits. The plan includes an off-highway vehicles (OHV) route inventory and is the current authority on OHV routes. There are no designated OHV routes in the solar facility area or gen-tie alternative routes.

Off-Road Vehicles (Title 43 CFR 8340, et seq.)

This regulation establishes criteria for designating public lands as open, limited, or closed to the use of OHVs and for establishing controls governing the use and operation of OHVs in such areas, while protecting resources, promoting safety, and minimizing user conflicts. Recreational use under Title VI "includes the use, where appropriate, of off-road recreational vehicles" (BLM 2001).

Riverside County Integrated Plan, General Plan, and Desert Center Area Plan

The Riverside County General Plan includes policy area locations, such as for Desert Center, that have a separate Land Use Plan for future development and growth. The entire project study area falls within the DCAP, which is part of the General Plan. Local land use does not apply to the BLM, but the FLPMA requires the BLM to coordinate with local governments in land use planning in Title II, Section 202, (b)(9).

Additional land use policies are described in more detail in Section 3.11, Lands and Realty.

3.14.2 Existing Conditions

Recreation Management Areas. The solar facility site and most of the length of the gen-tie alternatives occur on BLM-administered land. The portions of the proposed project and alternatives on BLM-administered land are managed as default Extensive Recreation Management Areas (ERMA). The BLM does not have recreation facilities, trails, or other improvements in the project study area and does not have traffic counters or other means of estimating use. ERMAs normally experience light to moderate dispersed recreation use, including camping, hiking, hunting, and OHV use. The proposed location of the DHSP includes land that is mostly classified as Multiple-Use Class M (Moderate Use) and some as Multiple-Use Class L (Limited Use). Multiple-Use Class M lands are controlled by a balance between higher intensity recreation use and protection of public lands. These lands are managed to provide a variety of uses, including mining, grazing, recreation, utilities, and energy development. Multiple-Use Class L lands are managed to provide for generally lower intensity, carefully controlled, multiple use of resources (BLM 2011), but can include developments like the Proposed Action. Open OHV areas permit driving or riding off designated routes; there are no BLM-designated open OHV areas in the project study area.

OHV Management/Designations. OHV use is allowed only on BLM-managed lands along designated routes that are open to travel or off of designated routes within open OHV areas per the NECO Plan Amendment to the CDCA Plan. Three open routes designated by the NECO

plan (660537, 660332, and 660533) intersect the solar facility site and would result in a maximum of approximately 5.7 miles of trail closures in the area. There are no open OHV areas in Riverside County where riding off of designated routes is permitted.

Other Roads

Several smaller unpaved and unmaintained local roads or routes have been documented in the project study area and are shown on Figure 3.14-1 in Appendix A.

Developed Recreation Sites. The Desert Center Airport, southwest of the proposed solar facility, was previously owned and operated by Riverside County but is now privately owned. The airport consists of one paved 4,200-foot-long, 50–foot-wide runway, a pilot lounge, storage building, beacon tower, and hangar (BLM 2011). The airport has been redeveloped for use as a private, members-only automotive racetrack, with spaces for recreational vehicles (no utility hook-ups) (BLM 2011).

Lake Tamarisk Resort is approximately 2 miles south of the solar facility site and adjacent to a portion of Alternatives B and C. This member-owned resort has 60 members and 150 mobile home spaces, mobile home rentals, camping spaces, a heated pool, a clubhouse, and a nine-hole public golf course.

Dispersed Recreation. Although not within the proposed solar facility footprint or intersected by gen-tie alternatives, the Desert Lily Area of Critical Environmental Concern (ACEC) is a recreation attraction in the project study area. This ACEC covers 2,031 acres and was established to protect botanical values, in particular, the desert lily (*Hesperocallis undulata*). This area is withdrawn from all forms of appropriation including mineral entry, and is bound on the western edge by a fence bordering Highway 177. It is 2.4 miles southeast of the solar facility site and 0.5 miles north of a portion of the gen-tie Alternative E. This ACEC is used by a few hundred visitors per year; it includes a car and RV camping area, and supports various recreation activities, such as photography and nature studies.

The Alligator Rock ACEC is also outside of the proposed solar facility site. The Alligator Rock ACEC is a 7,726 acres area that was dedicated as an ACEC for archaeological values. The ACEC is located 0.4 miles south of gen-tie line Alternatives B and C and 0.7 miles west of gen-tie line Alternatives D and E, on the west side of the Red Bluff Substation.

JTNP surrounds the northern portion of the project study area. The Joshua Tree Wilderness Area (discussed in Section 3.17 – Special Designations) is on the southern tip of the Coxcomb Mountains; this is less than 2 miles to the east of the DHSP at its closest point (Figure 2-1). The Joshua Tree Wilderness Area is composed of arroyos, playas, bajadas, narrow ravines, and steep mountains. Some visitors are likely to use this area for recreation because of its proximity to Highway 177, though in general, because of the steep terrain and lack of trails, much of the park in this area is difficult to access. As a result, most of the recreation use closest to the proposed project and alternatives is highly dispersed, with visitors seeking opportunities for day hiking, backpacking, and other forms of non-motorized recreation. Nonetheless, Wilderness values, including "solitude or a primitive and unconfined type of recreation," as well as “ecological, geological, or other features of scientific, educational, scenic, or historical value" as defined by the Wilderness Act are protected in Joshua Tree Wilderness. In addition, a 2010 JTNP visitor survey revealed that the most important attributes/resources to visitor groups in the Park as a

whole were (1) Views without development, (2) Clean air, (3) Natural quiet/sounds of nature, (4) Desert plants/wildflowers, (5) Native wildlife, (6) Access to rock formations, (7) Solitude, (8) Dark, starry night skies, and (9) Access to historical/cultural sites (Jette et al. 2011).

Motorized vehicles must stay on established roads within the Park. Aerial photography and the Park Service's visitor brochure reveal no significant trails, routes, or other park improvements within 8 miles of the solar facility boundary. Visitor studies were completed in spring 2004 and winter 2010 (Jette et al. 2011), but specific data are not available for visitor use and visitor preferences for dispersed recreation areas near the solar facility.

Chuckwalla Mountains and Palen-McCoy Wilderness Areas, administered by the BLM, are located 7 miles south and 10 miles east of the project study area. Both are discussed in Section 3.17-Special Designations; the DHSP would be visible from these areas.

The Edmund C. Jaeger Nature Sanctuary is also near the solar facility area, about 9 miles south of the DHSP site. In addition, Corn Springs Campground is about 20 miles south of the DHSP (south of I-10, surrounded by the Chuckwalla Mountains Wilderness); this campground averages 300 visitors a year (BLM 2011). The developed Wiley's Well and Coon Hollow Campgrounds are within the Mule Mountain Long Term Visitor Area (LTVA), located about 35 miles southeast of the solar facility site, and Midland LTVA is 45 miles east from the DHSP site (BLM 2011). LTVAs are long-term permit areas where "snow birds" can stay all winter in self-contained recreational vehicles (normally camping is limited to 14 days on public land). There are no facilities or services, except for a volunteer host, information kiosk, and vault toilet (no water). Each LTVA averages about 52 long-term visitors a year (BLM 2011). Chiriaco Summit, the location of the General Patton Museum, is 19 miles west of Desert Center, on BLM land (BLM 2011).

General Project Study Area Recreation Use. There is minimal recreation in close proximity to the solar facility site; however, some recreational uses have been observed by BLM staff and ranger patrols. The most common type of recreation is driving for pleasure or sightseeing, in both street legal vehicles and OHVs on approved routes. Car or RV camping may occur, but it has not been observed by BLM staff and is not considered a popular use. Day use of the area is most common, mostly by residents of Desert Center or off-duty workers from facilities around Eagle Mountain. Some hiking, photography, target shooting, and limited hunting is assumed to occur in the general area, but not on the solar facility site. Though the solar facility is near JTNP, access to the park and wilderness from this area is not common and has not been observed by BLM staff.

3.15 SOCIAL AND ECONOMIC SETTING

This section provides an overview of the applicable plans, policies, regulations and existing conditions, historic trends, and relevant projections for population and housing, employment and income, and public services and utilities that could be affected by implementation of the proposed project and alternatives. The project study area for social and economic resources encompasses local communities and unincorporated Riverside County in and around the proposed Desert Harvest Solar Project (DHSP). Data are provided for Riverside County, for local communities where applicable and available, and for California for comparison.

3.15.1 Applicable Plans, Policies, and Regulations

Federal

Applicable plans, policies, and regulations for socioeconomics include the National Environmental Protection Act (NEPA) (42 United States Code [USC] 4321 et seq.). NEPA requires an analysis of the Proposed Action's economic, social, and demographic effects related to effects on the natural or physical environment in the affected area, but does not require economic, social, and demographic effects to be analyzed in isolation from the physical environment.

State

California state regulations regarding socioeconomics (including the provision of public services and utilities) that apply to the proposed project include Title 14 of the California Code of Regulations, Chapter 3, Guidelines for Implementation of the California Environmental Quality Act (CEQA), Article 9(a), Section 15131; California Education Code, Section 17620; California Government Code, Sections 65996–65997; and California Revenue and Taxation Code, sections 721–725: California Board of Equalization (BOE) – Property Tax Rule 905 (BOE authority to assess electrical generating facilities is found in Article XIII, section 19, of California's Constitution).

CEQA Article 9(a), Section 15131, states the following with regard to economic and social effects:

- Economic or social effects of a project shall not be treated as significant effects on the environment. An Environmental Impact Report (EIR; a document prepared pursuant to CEQA) may trace a chain of cause and effect from a proposed decision on a project through anticipated economic or social changes resulting from the project to physical changes caused in turn by the economic or social changes. The intermediate economic or social changes need not be analyzed in any detail greater than necessary to trace the chain of cause and effect. The focus of the analysis shall be on the physical changes.
- Economic or social effects of a project may be used to determine the significance of physical changes caused by the project. For example, if the construction of a new freeway or rail line divides an existing community, the construction would be the physical change, but the social effect on the community would be the basis for determining that the effect would be significant. As an additional example, if the construction of a road and the resulting increase in noise in an area disturbed existing religious practices in the area, the disturbance of the religious practices could be used to determine that the construction and use of the road and the resulting noise would be significant effects on the environment. The religious practices would need to be analyzed only to the extent to show that the increase in traffic and noise would conflict with the religious practices. Where an EIR uses economic or social effects to determine that a phys-

ical change is significant, the EIR shall explain the reason for determining that the effect is significant.

- Economic, social, and particularly housing factors shall be considered by public agencies together with technological and environmental factors in deciding whether changes in a project are feasible to reduce or avoid the significant effects on the environment identified in the EIR. If information on these factors is not contained in the EIR, the information must be added to the record in some other manner to allow the agency to consider the factors in reaching a decision on the project.

The other California regulations pertain to social infrastructure and government revenues. Section 73 of the California Revenue and Taxation Code allows a property tax exclusion for certain types of solar energy systems installed between January 1, 1999, and December 31, 2016. This section was amended in 2008 to include the construction of an active solar energy system incorporated by an owner-builder in the initial construction of a new building that the owner-builder does not intend to occupy or use.

California Education Code, Section 17620, authorizes the governing board of any school district to levee a fee, charge, dedication, or other requirement against any construction within the boundaries of the district for the purpose of funding the construction or reconstruction of school facilities. California Government Code, Sections 65996–65997 includes provisions for school district levies against development projects. This section includes a discussion of school districts in the vicinity of the DHSP. Property Tax Rule 905 allows for the assessment of taxes on electric generation facilities.

The responsibilities of California utility operators working in the vicinity of utilities are detailed in Section 1, Chapter 3.1, "Protection of Underground Infrastructure" (Article 2 of California Government Code §§42 16-4216.9). This law requires that an excavator must contact a regional notification center at least two days prior to excavation of any subsurface installation. Any utility provider seeking to begin a project that may damage underground infrastructure can call Underground Service Alert, the regional notification center. Underground Service Alert will notify the utilities that may have buried lines within 1,000 feet of the project. Representatives of the utilities are required to mark the specific location of their facilities within the work area prior to the start of project activities in the area.

Local

The proposed project or its alternatives would be sited only in unincorporated areas in Riverside County, including the unincorporated town of Desert Center. The relevant plans for each of these jurisdictions include land use direction, policy guidance, and consistency zoning. The Riverside County General Plan (General Plan) was updated in 2008 to incorporate 19 more detailed Area Plans, including one for Desert Center. The Fiscal/Financial Analysis evaluates the potential for population and economic growth over the next 20 years, and the General Plan identifies areas suitable for development of the economic base and transportation system of Riverside County. The land use element designates the distribution and intensities of use, including residential, commercial, industrial, public facilities, and open space, for the entire county. The safety element establishes policies and programs to protect the community from risks associated with seismic, geologic, flood, and wildfire hazards; and the multipurpose open space element

provides management of the availability for parks. The housing element assesses housing needs and proposes residential sites for all economic segments of the County.

The Desert Center Area Plan (DCAP) reflects the limited areas available for development. Most of the area covered by the DCAP is remote, inaccessible, subject to natural hazards, or unable to support intense development due to a lack of public infrastructure and services. The plan, therefore, recommends infill development and expansion of areas contiguous to existing development. Guidance is provided for the transition of the former Kaiser iron ore mining facility to a Class III nonhazardous waste landfill (Eagle Mountain Landfill) with the former Kaiser employee housing area becoming a housing and service area for landfill employees (although a recent legal ruling has halted the landfill project). The area between Desert Center and Lake Tamarisk Park development could accommodate limited future expansion, accompanied by a plan amendment; growth in the area of the airport would be subject to restrictions due to public safety considerations (Riverside County 2003).

The Riverside County Board of Supervisors is considering a proposal to require a two percent franchise fee on gross annual receipts from solar energy projects. The fee is proposed to offset the social, environmental, and infrastructural impacts associated with expected solar development. The proposed fee would generate more than 30 million dollars annually for the county (Riverside County Board of Supervisors 2011). The fee is opposed by representatives of the Solar Industry and worker's unions, citing the potential loss of renewable energy employment (Berkman 2011). The proposal is still being reviewed by the County Board of Supervisors as of October 18, 2011 (Riverside County Riverside County Board of Supervisors 2011).

3.15.2 Existing Conditions

Regional Setting and Approach to Data Collection

This section presents an overview of the regional setting and comprehensive baseline population, housing, and employment data, as well as information on utilities and public services within the project study area for socioeconomic resources, which involves three subsets:

- The discussion of income and employment includes all of Riverside County and San Bernardino County because this is the area from which the labor force would be drawn, according to the Applicant (see Chapter 2);
- The discussion of public services and facilities also includes a large portion of Riverside County since, in general, these are supplied from a wider area than the unincorporated communities next to the Proposed Action and by regional providers; and
- The discussion of the area that would be affected with respect to social values, the potential for disruption of businesses, and potential disruption of utilities and public services is limited to Desert Center, Lake Tamarisk Park, and Eagle Mountain Village, as well as to businesses and residences next to construction activities.

The term "regional" is used to describe employment and income and the supply area from which public services and facilities are derived; the term "local" is used to describe social values, individual businesses, and the area where public services and utilities could be affected by the proposed project and alternatives.

The project study area lies entirely within unincorporated Riverside County. The proposed generation facility would be located entirely on BLM-administered land, but portions of all of the corridors for the gen-tie line alternatives would traverse private land. The nearest populated areas include the unincorporated town of Desert Center, the Lake Tamarisk Park development, and Eagle Mountain Village. The nearest incorporated population centers include Blythe, Coachella, and Indio in Riverside County, and Twentynine Palms in San Bernardino County.

Socioeconomic data were collected for jurisdictions in the vicinity of the proposed project that could be affected and would contribute to the construction labor force. Demographic, economic, and environmental justice data are derived from the California Department of Finance (CADOF), the U.S. Bureau of Economic Analysis (BEA), the BLM, the Applicant, and Riverside County. Public services and utility information was collected from planning documents or other published information from the jurisdictions in the project study area.

Population and Housing

There are 26 incorporated areas within Riverside County, where the majority (about 78 percent of its population) resides. With a population of 2,189,641 as of April 2010, it ranks as the fourth most populous of California's 58 counties, after Los Angeles, San Diego, and Orange Counties. Table 3.15-1 shows the historic population data (for 1990 and 2000) and the 2010 census population data for Riverside County and the State. As identified in Table 3.15-1, the population of Riverside County grew by more than twice the rate of the State between 1990 and 2000 and more than four times the rate of the State between 2000 and 2010. Between 1990 and 2000, the population in incorporated areas was greater than in unincorporated areas, and most population growth occurred in incorporated areas (BLM 2011; CADOF 2011a). The most current population counts for unincorporated areas in Riverside County are available from the U.S. Census Bureau for the 2010 Census. As of 2010, Census Block data show that the population of Desert Center is 85, based on 14 census blocks analyzed and the population of Lake Tamarisk Park is 174, based on 15 census blocks analyzed. Since 2007, the dominant source of population increase in Riverside County has been from natural increase; in the previous years since 1999 the population increase had been dominated by in-migration (CADOF 2011b).

Table 3.15-1. Current and Historic Population

Location	1990	2000	Percent Change 1990–2000	2010	Percent Change 2000–2010
Riverside County (number)	1,144,400	1,535,125	34.14%	2,189,641	42.64%
Riverside County (percent of State total)	3.87	4.55		5.88	
Incorporated	765,800	1,117,163	45.88	1,685,249	50.85
Blythe	13,271	20,465	29.14	20,817	1.73
Coachella	17,139	22,724	32.58	40,704	79.12
Indio	37,691	49,116	30.31	76,036	54.81
Unincorporated	378,600	417,962	10.40	504,392	20.68
California	29,558,000	33,721,583	14.09	37,253,956	10.48

Source: BLM 2011; CADOF 2011a, 2011b

As shown in Table 3.15-2, the population of Riverside County is forecast to grow by a greater percentage than the State throughout the planning period, increasing by over 60 percent between 2010 and 2030 (CADOF 2007).

In Riverside County, the vacancy rate in 2010 for single- and multiple-family housing units and mobile homes in both incorporated and unincorporated portions of the county was approximately 14 percent. Table 3.15-3 identifies the housing vacancy of the incorporated areas nearest to the project study area. Indio had the highest vacancy rate of the nearby cities and the largest number of vacant units.

Table 3.15-2. Population Projections

Year/Location	Population	Percent Change
2020		
Riverside County	2,904,848	29.74%
California	44,135,923	12.78
2030		
Riverside County	3,507,498	20.75%
California	49,240,891	11.57
2010 to 2030 Change		
Riverside County	1,317,857	60.19%
California	11,986,935	32.18

Source: CADOF 2007.

Table 3.15-3. 2010 Housing Characteristics

Location	Total Housing Units	Percent Vacant	Number Vacant
Riverside County	800,707	14.29%	114,447
Incorporated	627,564	14.49	90,956
Blythe	5,473	17.54	960
Coachella	9,903	9.14	905
Indio	28,971	19.31	5,593
Unincorporated	173,143	13.57	23,491
Twentynine Palms, San Bernardino County	9,431	14.17	1,336

Source: CADOF 2011c

Research shows that construction workers would commute as much as two hours each direction from their communities rather than relocate (BLM and CEC 2009), and the Applicant has indicated that, to the extent possible, the labor force for the DHSP would be derived from Riverside County (much of which is within this two-hour commute window). However, some employees may choose temporary lodging facilities closer to the DHSP in nearby municipalities. Hotels and rooms available in Riverside County totaled 22,508 rooms and 242 properties as of December 2008 (BLM 2011). Relative to the proposed solar facility, the closest community is the Town of Desert Center; however, information regarding the availability of lodging in Desert Center was not available. The closest municipality to the east is Blythe, at 48 miles, and to the west is Indio, at 49 miles. Between Blythe and Indio there are about 35 lodging facilities offering an average of roughly 55 rooms per facility.

The environmental baseline for the DHSP includes the preliminary construction of the Desert Sunlight Solar Farm project which has been underway in September 2011. Construction workers for this project were also assumed to be housed in nearby communities including Blythe and Indio. Although availability and lodging cost is subject to change based on season and demand, room rates in the project study area range between $40 and $120. Municipalities to the north and south, such as Twentynine Palms and Brawley, would be less likely to provide lodging that would be appropriate in terms of proximity, driving time, or cost.

Employment and Income

During construction, the solar facility workforce is expected to average 100, with a peak of 250 total on-site workers. The workforce for the gen-tie line is expected to average 30 employees over the 20-month gen-tie line construction period, with a peak of 65 employees. As previously stated, the Applicant has indicated that the construction workforce would be recruited from within Riverside County, San Bernardino County, and elsewhere in the surrounding area, as

available and would not be expected to relocate closer to the project (BLM and CEC 2009). Table 3.15-4 provides the most current data available on employment sectors in Riverside and San Bernardino Counties. As shown in Table 3.15-4, most industry sectors in these counties provided similar levels of employment to those of the State. Construction was one of the largest employment sectors in Riverside and San Bernardino Counties, with a higher percentage of the population employed than at the State level. Government was the largest employer in both Riverside and San Bernardino Counties, with local government providing the majority of the employment in this sector.

The historic trend between 1990 and 2000 shows that the labor force in Riverside County increased by about 27 percent, and that the unemployment rate decreased from 7.2 percent to 5.4 percent. Between 2000 and 2007 the labor force increased by another 34 percent, but unemployment also increased to 6.0 percent. By 2008 unemployment had reached an annual average of 8.6 percent, with a total of 78,967 unemployed out of a labor force of 918,845 (BLM 2011; BLS 2011a). In June 2010 and 2011 the percentage of unemployment in California, at 12.2 percent and 12.1 percent, was lower than for Riverside County at 14.5 percent and 14.4 percent, for these years (BLS 2011a and 2011b).

Between 1980 and 2007, per capita personal income in Riverside County remained below the State average, with a gap that has widened in almost every year. The widest gap between the County and State averages was in 2007 at $12,245. In 2007, per capita personal income in Riverside County was $29,560; while, the State average was $41,805. High average per capita incomes in San Francisco, San Mateo, Santa Clara, Contra Costa, Napa, and Orange Counties helped to boost the overall State average (BLM 2011).

Table 3.15-4. Employment by Industry in Riverside and San Bernardino Counties

NAICS Industry	Riverside County Employment (Number)	Riverside County Employment (Percent of Total County Employment)	San Bernardino County Employment (Number)	San Bernardino County Employment (Percent of Total County Employment)	California Employment (Percent of Total State Employment)
Total employment	807,078		876,206		
Wage and salary employment	594,330	73.64%	698,761	79.75%	77.81%
Proprietors employment	212,748	26.36	177,445	20.25	22.19
Farm proprietors employment	2,896	0.36	1,209	0.14	0.33
Nonfarm proprietors employment	209,852	26.00	176,236	20.11	21.86
Farm employment	7,685	0.95	2,972	0.34	1.08
Nonfarm employment	799,393	99.05	873,234	99.66	98.92
Private employment	670,436	83.07	733,956	83.77	85.60
Forestry, fishing, and related activities	7,016	0.87	961	0.11	1.03
Mining	2,022	0.25	1,124	0.13	0.27
Utilities	1,884	0.23	4,276	0.49	0.30
Construction	62,194	7.71	53,914	6.15	5.45
Manufacturing	43,433	5.38	62,611	7.15	7.26
Wholesale trade	24,059	2.98	39,265	4.48	3.82
Retail trade	98,101	12.16	105,396	12.03	9.88
Transportation and warehousing	25,707	3.17	57,327	6.54	2.94

Table 3.15-4. Employment by Industry in Riverside and San Bernardino Counties

NAICS Industry	Riverside County Employment (Number)	Riverside County Employment (Percent of Total County Employment)	San Bernardino County Employment (Number)	San Bernardino County Employment (Percent of Total County Employment)	California Employment (Percent of Total State Employment)
Information	9,656	1.20	9,031	1.03	2.65
Finance and insurance	40,123	4.97	29,569	3.37	4.73
Real estate and rental and leasing	40,692	5.04	38,319	4.37	5.03
Professional, scientific, and technical services	43,411	5.38	36,761	4.20	8.61
Management of companies and enterprises	3,329	0.41	6,746	0.77	1.07
Administrative and waste management services	53,062	6.57	71,916	8.21	6.30
Educational services	9,924	1.23	12,089	1.38	2.00
Health care and social assistance	70,284	8.71	82,974	9.47	8.70
Arts, entertainment, and recreation	18,118	2.24	12,184	1.39	2.61
Accommodation and food services	65,512	8.12	56,626	6.46	6.93
Other services, except public administration	51,909	6.43	52,867	6.03	6.02
Government and government enterprises	128,957	15.98	139,278	15.90	13.31
Federal, civilian	6,969	0.86	12,954	1.48	1.20
Military	3,559	0.44	20,004	2.28	1.08
State and local	118,429	14.67	106,320	12.13	11.04
State government	13,270	1.64	12,670	1.45	2.42
Local government	105,159	13.03	93,650	10.69	8.62

Source: BEA 2011

Public Services and Utilities

The public services and utilities in Riverside County discussed in this section include schools, hospitals, fire response, police departments, electrical and natural gas service, water districts, and cable and telecommunications suppliers. These are services that could be affected either by construction of the proposed project and alternatives or population growth if it were to result from the proposed project and alternatives.

There were 472 schools in Riverside County in the 2009 to 2010 fiscal year, with a total enrollment of 423,412 students and a pupil-to-teacher ratio of 23.1. These schools included 278 elementary schools with 198,901 students, 77 middle schools with 84,068 students, 57 high schools with 120,376 students, and 6 kindergarten-through-twelfth-grade schools with 5,462 students. The school nearest to the solar facility, the Eagle Mountain Elementary School, is part of the Desert Center Unified School District. It had an enrollment of 19 students in 2009 to 2010 and is located along Kaiser Road in the project study area. Palo Verde Valley High School and Palo Verde College are about 40 miles southeast solar generation facility along I-10. Indio High School, La Quinta High School, and Page Middle School are about 45 miles southwest of the project study area along I-10, and Twentynine Palms High School in San Bernardino County, north of JTNP is the nearest school to the north (Education Data Partnership 2011).

Thirty-seven hospitals are located in Riverside County. Closest to the DHSP are Palo Verde Hospital in Blythe, John F. Kennedy Memorial Hospital in Indio, Eisenhower Medical Center in Rancho Mirage, Desert Regional Medical Center in Palm Springs, High Desert Medical Center in Joshua Tree (San Bernardino County), and Angel View Children's Hospital in Desert Hot Springs (California Gazetteer 2011).

All fire stations in Riverside County are dispatched by the California Department of Forestry and Fire Protection (CAL FIRE) Riverside Unit/Riverside County Fire Department Emergency Command Center and are part of the "Integrated Fire Protection System," under contract with the State. Ninety-nine fire stations or dispatch centers are within Riverside County, of which 84 have paramedic firefighters, seven are fire stations only, five are volunteer fire companies only, and three are municipal fire departments that contract with Riverside County for dispatch services. Closest to the project study area are the Lake Tamarisk Fire Station in Desert Center (with one County paramedic assessment engine), Blythe Air Base in Blythe (with one County paramedic assessment engine), Riverbend Volunteer Fire Department in Blythe, La Quinta South Fire Station in La Quinta (with one City paramedic assessment engine and one County brush engine), Coachella Fire Station (with one City paramedic assessment engine), Sun City Shadow Hills Station in Indio (with one City paramedic assessment engine), and Indio, North Indio, and West Indio Fire Stations (Riverside County Fire Department 2011).

The Riverside County Sheriff's Department provides police services in unincorporated Riverside County and provides contract services to individual municipalities in Riverside County. The Colorado River Station in Blythe provides service to the unincorporated area from Red Cloud Road on the west, to the Arizona state line on the east, and the Imperial County line on the south to the San Bernardino County line on the north. Communities included in this area are Desert Center, Eagle Mountain, East Blythe, Midland, Nicholls Warm Springs, Ripley, and the Colorado River (Riverside County Sheriff's Department 2011). Similarly, the project study area falls within the Border Division of the California Highway Patrol. This division has 12 area offices: Blythe, San Juan Capistrano, El Cajon, Imperial, Indio, Oceanside, San Diego (division office), Beaumont, Santa Ana, Temecula, Westminster, and Felicity. Additionally, the Border Division of the Highway Patrol contains four residential posts, five commercial inspection facilities, two transportation management centers, 900 uniformed officers, and 380 nonuniformed personnel (California Highway Patrol 2011).

SCE provides electric power service to the project study area. An existing SCE 161 kV transmission line crosses Eagle Mountain Road, Kaiser Road, and Desert Center Rice Road from the northwest to the southeast from about 1 mile north of the Eagle Mountain Substation toward Blythe, and the SCE Devers Palo Verde (DPV) transmission line is along I-10 on the south side of the highway. The DPV2 transmission line that would parallel the existing DPV1 transmission line is under construction. MWD owns the Eagle Mountain Substation along Powerline Road, as well as the 230 kV transmission line and 33 kV distribution line along Powerline Road (BLM 2011).

Additional public utilities in the study area are provided by the following:

- Water: MWD;
- Natural Gas: Southern California Gas Company;
- Waste Management: Riverside County Waste Management Department; and
- Telecommunications: Sprint Communications, AT&T Communications, and AT&T California.

3.16 ENVIRONMENTAL JUSTICE

This section provides an overview of the applicable plans, policies, and regulations and existing conditions for environmental justice. The project study area for environmental justice encompasses the Census Tracts that includes all areas within one-half mile (0.5 miles) of the proposed project and alternatives. Data are provided for Riverside County, for local communities where applicable and available, and for California for comparison.

3.16.1 Applicable Plans, Policies, and Regulations

Federal

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires that federal agencies, as well as state agencies receiving federal funds, identify and address any disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations.

State

There are no California state regulations regarding environmental justice that apply to the proposed project and alternatives.

Local

There are no Riverside County regulations regarding environmental justice that apply to the proposed project and alternatives.

3.16.2 Existing Conditions

Several steps have been undertaken in order to protect low income and minority populations from disproportionate impacts from the proposed project and alternatives, including public outreach and a screening analysis of potential environmental justice populations in the vicinity of the proposed project. Public outreach to the communities and residents that could be affected by the proposed project and alternatives, including low-income and minority populations, is discussed in Section 5 (Consultation) and includes public scoping. In addition, the BLM has engaged in official government-to-government consultation with all Native American tribes that could be affected by the proposed project and alternatives.

The intention of an environmental justice screening analysis is to determine whether a low-income and/or minority population exists within the potential affected area of a proposed action. As defined by the "Final Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses" (EPA 1998), minority and low-income populations are identified where either:

- The minority or low-income population of the affected area is greater than 50 percent of the affected area's general population; or
- The minority or low-income population percentage of the affected area is meaningfully greater (50 percent or greater) than the minority or low-income population percentage in the general population of the jurisdiction or other appropriate unit of geographic analysis (i.e., County, State, or Native American reservation) where the affected area is located.

The demographic data in this section present the distributional patterns of minority populations and low-income populations for the immediate vicinity of the proposed project and alternatives, Riverside County, and the State of California.

Census Block Group data on poverty levels and racial and ethnic population distribution provide the finest scale of screening data that is widely available. Ethnic data are available from the 2010 census; however, the most recent information on poverty at this resolution dates back to 2000. Therefore additional, more recent, county-level data are provided to supplement the poverty-level information and identify the direction of changes to the income and racial and ethnic composition of the project study area. Census Block Group data, Census Tract data, county data, and state averages are all compared to determine whether the local ethnic and poverty distribution differs from the California average.

In 2000, the project study area lay within one Census Tract (458) in Riverside County and three Block Groups (3, 5, and 6). In the 2010 census, the study area lay entirely within one Census Tract (469) in Riverside County, which contained only one Block Group (1).

Table 3.16-1 shows that in 2000, Census Tract 458, in which all elements of the proposed project and alternative are situated, had a higher percentage of black or African American, American Indian and Alaska Native, Native Hawaiian and Other Pacific Islander, Some Other Race, and Hispanic minority populations than the county average or State average for that same year. In 2010, Census Tract 469 had a higher percentage of white and Hispanic populations than county and State averages, and lower percentages of Asian, black, and total minority populations. The Asian population in the project study area was much lower than State and county averages in both 2000 and 2010. Data from 2010 indicate that the overall percentage of minorities decreased for the Census Tract, but the percentage of the Hispanic minority increased.

Table 3.16-1. Population by Percentage Race/Ethnicity

	2000				2010		
Percent Race/Ethnicity	California	Riverside County	Census Tract 458	Block Groups 3, 5, 6	California	Riverside County	Census Tract 469
White	46.70%	51.04%	27.92%	26.71%	40.1%	39.7%	42.68%
Black or African American (not Hispanic)	6.44	5.98	20.68	21.39	5.8	6.0	1.66
American Indian and Alaska Native (not Hispanic)	0.53	0.66	0.84	0.78	0.4	0.5	0.59
Asian (not Hispanic)	10.77	3.57	1.31	1.34	12.8	5.8	0.59
Native Hawaiian and Other Pacific Islander (not Hispanic)	0.31	0.21	0.34	0.35	0.3	0.3	0.10
Some other race (not Hispanic)	0.21	0.16	1.21	1.26	0.2	0.2	0.20
Two or more races (not Hispanic)	2.67	2.17	0.85	0.88	2.6	2.2	1.91
Hispanic of all races	32.38	36.21	46.83	47.29	37.6	45.5	52.28
All minorities	50.43	46.63	70.00	71.15	57.02	60.5	55.41

Source: U.S. Census Bureau 2010a, 2010b, 2000a, and 2000b; CADOF 2011d.

The U.S. Census Bureau uses a set of income thresholds to determine which families are living in poverty; the thresholds vary by family size and composition. If a family's total income is less than the respective threshold, then that family, and every individual in it, is considered to be living in poverty. The poverty thresholds do not vary geographically but they are updated annu-

ally for inflation using the Consumer Price Index. For example, in 1999 the average estimated poverty threshold for an individual was an annual income of $8,501, and for 2010 it was $11,139 (U.S. Census 2010 and 2011). According to U.S. Census 2000 estimates for the year 1999 (Table 3.16-2), the percentage of the population of Census Tract 458 living below the poverty line, although well below 50 percent, was greater than that of either Riverside County or the State. The percentage of the population living below the poverty line in Census Blocks 3, 5, and 6 were below that of Riverside County and the State at 4.3 percent. In 1999, the median household income for Census Tract 458 was about 70 percent of the Riverside County average and 63 percent of the State average (U.S. Census 2000c). In 2010, the percentage of the population living in poverty in Riverside County dropped below the State average, while the median income for the County continued to be lower than the State average (U.S. Census 2010b). Poverty data for Census Blocks 3, 5, and 6 for 2009 are not available.

Table 3.16-2. Poverty Characteristics

	1999		2010	
Location	Poverty Line Income for Individuals	Percent Below Poverty Line	Poverty Line Income for Individuals	Percent Below Poverty Line
Census Tract 458 (2000) or 469 (2010)	$8,501	21.4%	N/A	N/A
Census Block Groups 3, 5, and 6 (2000) or Group 1 (2010)	8,501	4.3	$11,139	N/A
Riverside County	8,501	14.2	11,139	13.9%
California	8,501	14.2	11,139	14.2

Source: U.S. Census Bureau 2000c, 2002, 2009b, and 2009c.

3.17 SPECIAL DESIGNATIONS

This section describes the environmental and regulatory settings associated with the construction and operation of the proposed DHSP or its alternatives with respect to special designations. Specially designated lands are identified for the region surrounding the project study area. The project study area includes all areas with special designations that could be affected by construction, operation, and decommissioning of the DHSP, and is bounded by the northern boundary of the Joshua Tree Wilderness Area south to the southern boundary of the Chuckwalla Mountains Wilderness Area, and bounded on the east and west by the outer boundaries of these Wilderness Areas. The project study area includes Alligator Rock Area of Critical Environmental Concern (ACEC), Desert Lily Preserve ACEC, Chuckwalla Desert Wildlife Management Area (DWMA), and the Palen-Ford Wildlife Habitat Management Area (WHMA).

3.17.1 Applicable Plans, Policies, and Regulations

Federal Laws and Regulations

Federal Land Policy Management Act of 1976

The designation of Areas of Critical Environmental Concern (ACECs) was authorized in Section 202 (c)(3) of FLPMA, and was designed to be used as a process for determining the special management required by certain environmental resources or hazards (BLM 1980). According to Section 103(a) of FLPMA, an ACEC is defined as the following:

> *An area within the public lands where special management attention is required (when such areas are developed or used or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes, or to protect life and safety from natural hazards.*

Prior to its designation, management prescriptions are developed for each proposed ACEC. These prescriptions are site-specific and include actions that the BLM has authority to implement, as well as recommendations for actions that the BLM does not have direct authority to implement, such as cooperative agreements with other agencies and mineral withdrawals (BLM 1980).

Wilderness Act of 1964

Wilderness Areas (WAs) are designated by Congress, under the authority of the Wilderness Act of 1964 as part of the National Wilderness Preservation System, and are managed by one of the following four land management agencies: the BLM, the U.S. Fish and Wildlife Service (USFWS), the U.S. Department of Agriculture (USDA) Forest Service, or the National Park Service.

The Wilderness Act defines wilderness as follows:

> *(c) A wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain. An area of wilderness is further defined to mean in this chapter an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and*

> *which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value.* (Public Law 88-577, Section 2[c])

A number of uses are specifically prohibited within WAs. Prohibited uses include commercial enterprises; permanent and temporary roads (with exceptions for administration and emergency purposes); use of motorized vehicles, equipment, motorboats, or mechanical transport; landing of aircraft; or the erection of a structure or installation (Public Law 88-577, Section 4[c]).

California Desert Protection Act of 1994

The CDPA designated 69 WAs on BLM-managed public lands in the California Desert. The CDPA states that "wilderness is a distinguishing characteristic of the public lands in the California desert" and "The wilderness values of desert lands are increasingly threatened by . . . development." The CDPA further states that there are no buffer zones designated along with wilderness areas: "The fact that nonwilderness activities or uses can be seen or heard from areas within a wilderness area shall not, of itself, preclude such activities or uses up to the boundary of the wilderness area [Public Law 103-433, Section 103(d)].

BLM Policy and Plans

BLM Manual 8560, Management of Designated Wilderness Areas

This manual section identifies the BLM's role in administering WAs on public lands, provides policy guidance for BLM personnel, and sets the framework for wilderness management program development. It states the goals of wilderness management, as well as administrative functions and specific activities related to wilderness management.

California Desert Conservation Area Plan

The CDCA is a 25-million acre expanse of land in southern California designated by Congress in 1976 through FLPMA. The BLM administers about 10 million of those acres. When Congress created the CDCA, it recognized its special values, proximity to the population centers of southern California, and the need for a comprehensive plan for managing the area. Congress stated that the CDCA Plan must be based on the concepts of multiple use, sustained yield, and maintenance of environmental quality. The site of the proposed project and alternatives is located within the CDCA. The primary active wildlife management tools used in the CDCA Plan are ACECs. Refer to Sections 3.3 (Wildlife), 3.4 (Vegetation), and 3.11 (Lands and Realty) for a more detailed discussion of these aspects of the CDCA Plan.

Northern and Eastern Colorado Desert Coordinated Management Plan

The Northern and Eastern Colorado Desert Coordinated Management Plan (NECO) was prepared under the regulations implementing FLPMA. The NECO plan established regional standards for public land health and set forth guidelines for grazing management. The NECO plan also established two Desert Wildlife Management Areas (DWMAs) encompassing 1.75 million acres that are managed as ACECs for recovery of the desert tortoise. Southern Mojave and

Sonoran Wildlife Habitat Management Areas (WHMAs) for bighorn sheep were established totaling over 1 million acres and 13 multi-species WHMAs totaling over 500 million acres such that 80 percent of the distribution of all special status species and all natural community types are included in conservation areas. The NECO plan also combined herd management areas for wild horses and burros, designated routes of travel, identified principles for acquisition of private lands and disposal of public lands, provided access to resources for economic and social needs; and incorporated 23 wilderness areas established by the 1994 CDPA in the CDCA.

Local Regulations

County of Riverside General Plan, Desert Center Area Plan, 2003

This Plan describes a multi-purpose open space element for the unincorporated areas of Riverside County and Desert Center. It defines local open space policies that relate to wildlife habitat, particularly desert tortoise, and aims to preserve the desert environment. The three local open space policies defined for Desert Center within the Riverside County General Plan are:

- Encourage clustering of development for the preservation of contiguous open space;
- Work to limit OHV use within the Desert Center Area Plan; and
- Require new development to conform with desert tortoise critical habitat designation requirements.

A more specific discussion of the Riverside County General Plan is provided in Section 3.11, Lands and Realty.

3.17.2 Existing Conditions

The locations of all lands with special designations in the project study area are shown in Figure 2-1 in Appendix A.

Areas of Critical Environmental Concern

There are two ACECs near the DHSP site, as well as one DWMA and one WHMA, both of which are considered ACECs:

- Alligator Rock ACEC,
- Desert Lily Preserve ACEC,
- Chuckwalla DWMA, and
- Palen-Ford WHMA.

The first two ACECs were officially designated with the approval of the CDCA Plan in 1980. No project activities are proposed within an ACEC. The Chuckwalla DWMA was designated to protect desert tortoise habitat in the Northern and Eastern Colorado Desert Coordinated Management Plan. Management emphasis for the Palen-Ford WHMA is on the management of the dunes and playas within the Palen-Ford dune system.

Alligator Rock ACEC

Covering 7,726 acres, this ACEC was established to protect archaeological values. Prehistoric activities represented at archaeological sites within the ACEC included milling seeds and other

food products, manufacturing stone tools, storing food and other items, temporary habitation, travel, trade, hunting, artistic endeavor, and possibly religious or ritual activity. The Alligator Rock ACEC was so designated not only because of the unusual array of archaeological sites present, but also because these sites are endangered by current use of the area for a number of activities, particularly recreation. Two sites within the ACEC have been listed on the National Register of Historic Places (BLM 1986).

Actions taken to protect the sensitive resources within this ACEC include designating road closures in certain areas to prevent vehicular damage to archaeological sites, and implementing physical protection measures, continued inventorying, and monitoring (BLM 1986). It is located approximately 6 miles south of the proposed solar facility site.

Desert Lily Preserve ACEC

This ACEC covers 2,031 acres and was established to protect botanical values, in particular, the desert lily (*Hesperocallis undulata*). This area is withdrawn from all forms of appropriation including mineral extraction, and is bound on the western edge by a fence bordering Highway 177. It is located 2.6 miles southeast of the proposed solar facility site. This ACEC has a parking area and is one of the few recreational attractions in the project study area. The ACEC receives a few hundred visitors per year for car and RV camping, photography, and nature study.

Chuckwalla DWMA

The Chuckwalla DWMA was designated to protect desert tortoise as well as significant natural resources, including special status plant and animal species and natural communities. It encompasses 818,685 acres, 465,287 acres of which (57 percent) are on BLM land. Conservative estimates based on the USGS habitat model indicate that approximately 70 percent of the Chuckwalla DWMA is suitable desert tortoise habitat with the remaining 30 percent unsuitable. As defined in the NECO Plan, examples of management actions to protect resources within the Chuckwalla DWMA include limiting cumulative new surface disturbance on lands administered by the BLM within any DWMA to 1 percent of the BLM-administered portion of the DWMA, and implementing grazing, recreation, and travel restrictions.

Palen-Ford WHMA

While DWMAs were established in the NECO Plan to address the recovery of the desert tortoise, WHMAs were established to address other special-status species and habitat management. Management emphasis is placed on active management, specific species and habitats mitigation, and restoration from authorized allowable uses. The special situation of “fixed-point” rare plants is also addressed. The Palen-Ford WHMA was specifically established to protect the dunes and playas (NECO sensitive habitat types) and the Mojave fringe-toed lizard (BLM and CDFG 2002). The Palen-Ford WHMA includes 39,366 acres of Sonoran creosote scrub, 13,104 acres of desert dry wash woodland, 17,690 acres of sand dunes, 381 acres of chenopod scrub, 13,696 acres of playas, and 152 acres of agriculture and urban uses (Palen Solar Project PA-FEIS, Appendix I, 2011).

Wilderness

The Chuckwalla Mountains Wilderness to the south and the Joshua Tree Wilderness to the west, north, and east are the WAs closest to the DHSP area. The Palen-McCoy Wilderness is farther

away, approximately 11 miles to the east. Project activities are not proposed within any Wilderness Area. In areas designated as a wilderness, use of motorized or mechanized vehicles or equipment by the public is not permitted. These wilderness areas have no trails, facilities, or water and receive little recreation use. Though permitted, there is no record of hunting, fishing, or trapping in these areas. Short day hikes may occur, but backpacking or camping has not been observed or recorded. There are no trailheads, parking, or other access to the Joshua Tree Wilderness from the project site, or nearby. The Chuckwalla Mountains Wilderness Area is more accessible due to the Corn Springs Campground, which is surrounded by the wilderness.

Joshua Tree National Park Wilderness

The 594,502-acre Joshua Tree National Park Wilderness, which is administered by the National Park Service, is approximately 42 miles west of Blythe, California. Designated in 1976 by the Wilderness Act, the Joshua Tree Wilderness became part of JTNP in 1994 when the park (then a National Monument) was expanded and designated as a National Park by the California Desert Protection Act. This Wilderness Area is approximately 3.8 miles west and 1.8 miles north of the DHSP site. The proposed solar facility site and gen-tie alternative E would pass within 2 miles of the boundary of the Park and the Wilderness Area near the southern end of the Coxcomb Mountains. The steep terrain of this WA provides views to the south and west, which overlook the project site. Some visitors are likely to access this area because of its proximity to Highway 177. In general, however, much of the park in this area is difficult to access because of the steep terrain and lack of trails.

This WA is composed of two unique desert ecosystems. The Colorado Desert to the east is home to abundant creosote, the spidery ocotillo, and the jumping cholla cactus. The Mojave Desert covers the western area and is home to the wilderness namesake, the Joshua tree. Visitors to this wilderness seek desert experiences with opportunities for solitude and unconfined recreation. Aerial photography shows no trails or other established routes within this wilderness segment. Visitor use and visitor preference data for the WA are not available, as the Park does not require visitor registration for entrance to the WA. However, a 2010 JTNP visitor survey revealed that the most important attributes/resources to visitor groups in the Park as a whole were (1) Views without development, (2) Clean air, (3) Natural quiet/sounds of nature, (4) Desert plants/wildflowers, (5) Native wildlife, (6) Access to rock formations, (7) Solitude, (8) Dark, starry night skies, and (9) Access to historical/cultural sites (Jette et al. 2011). The WA closest to the DHSP site can be accessed three ways: (1) the west entrance is 5 miles south of the junction of State Highway 62 and Park Boulevard at Joshua Tree Village; (2) the north entrance is in the community of Twenty-Nine Palms; and 3) the south entrance is 20 miles east of Indio and approximately 27 miles west of Desert Center and can be approached from I-10.

Chuckwalla Mountains Wilderness

The Chuckwalla Mountains WA is located approximately 40 miles west of Blythe, California, and covers 99,548 acres. This WA is approximately 6 miles south of the solar facility site. It was designated by the CDPA in 1994. It is composed of a variety of landforms, such as steep-walled canyons, inland valleys, large and small washes, isolated rock outcrops, and vast desert expanses. As a result, it provides habitat for a variety of plant and wildlife species, including bighorn sheep, burro deer, desert tortoise, ocotillo, and barrel and foxtail cactus. The area can be accessed from both the west and east from I-10.

Hunting, fishing, and non-commercial trapping are allowed under state and local laws. Pets and horses are permitted. This WA overlooks the solar facility site.

Palen/McCoy Wilderness

The Palen/McCoy Wilderness Area encompasses approximately 236,488 acres. Within it are the Granite, McCoy, Palen, Little Maria and Arica Mountains, which are five distinct mountain ranges separated by broad sloping bajadas. The diversity of vegetation and landforms is exceptional because this large area incorporates so many major geological features. The desert wash woodland found here provides food and cover for burro deer, coyote, bobcat, gray fox and mountain lion. Desert pavement, bajadas, interior valleys, canyons, dense ironwood forests, canyons and rugged peaks form a constantly changing landscape pattern. State Highway 62, near the Riverside County line provides access from the north, and I-10 via the Midland Road near Blythe provides access from the south. The area is accessible by four-wheel drive vehicles only. Mechanized or motorized vehicles are not permitted within the boundaries of Wilderness Areas. This WA is 10 miles east of the proposed solar facility site.

Lands with Wilderness Characteristics

All Public Lands within the BLM's California Desert District were analyzed and summarized in 1979 wilderness inventory decisions performed pursuant to the FLPMA. See "California Desert Conservation Area – Wilderness Inventory – Final Descriptive – March 31, 1979." The solar facility site would be located within CDCA Wilderness Inventory Unit (WIU) #CDCA 332.

WIU #CDCA 332, an area of approximately 4,000 acres, is bounded on the southeast by Highway 177, on the southwest by the Kaiser Mine Road and a power line, on the northwest by a transmission line and road associated with the Los Angeles Aqueduct and on the northeast by a road (which forms a portion of the boundary of JTNP). The dominant feature of the WIU is a southerly trending wash. Vegetation is sparse and primarily creosote. Most developments are on private lands. However, there are several rights-of-way within the WIUs associated with the Los Angeles Aqueduct and the Kaiser Mine. The 1979 decision was that the imprints of man were substantially unnoticeable in WIU #CDCA 332. However, WIU #CDCA 332 had no outstanding opportunities for solitude or primitive and unconfined recreation; therefore, it was determined that no wilderness characteristics are present in the area. As a result, no portions of this Public Land were identified as a wilderness study area, and wilderness characteristics are not analyzed further in this EIS.

3.18 TRANSPORTATION AND PUBLIC ACCESS

This section describes the environmental and regulatory settings associated with the construction and operation of the proposed project or its alternatives with respect to transportation and public access in the project study area. The project study area for transportation and public access has four parts: existing state and County maintained roads within 1 mile of the proposed project and gen-tie line alternatives that would be mostly unaffected except for traffic increases that could temporarily affect the level of service or could result in some road damage; off-site existing roads needing improvement to a standard to support construction traffic; off-site new roads needed to access individual structure locations or the ROW; and roads built within the solar facility ROW connecting structure locations.

The project study area for airports includes portions of routes that intersect areas within 3 miles of an airport or airstrip, including the controlled airspace. The project study area for railroads and pipelines is the point of intersection with the ROW. No railroads or pipelines closely parallel the proposed project or gen-tie line alternatives.

3.18.1 Applicable Plans, Policies, and Regulations

California Desert Conservation Area Plan of 1980, as amended

The California Desert Conservation Area (CDCA) Plan, as amended, provides a framework for land management decision-making for the BLM-administered lands in the California Desert District (CDD). First, land is assigned to one of four BLM Multiple Use Classes. Then, specific land management decisions are made as needed based on the uses and usage level appropriate for each class (BLM 1994). The CDCA Plan addresses vehicle travel and access across public lands as follows:

> *The need for access across public lands to permit utilization of State and privately owned lands and to permit authorized developments on public lands, including mining claims, is recognized. The routes of travel and construction standards are subject to such BLM control as is required to prevent unnecessary or undue degradation of the public lands and their resources or to afford environmental protection* (BLM 1994).
>
> *To engage in most desert recreational activities outside of open areas, visitors must use motorized vehicles and usually travel on some previously used or marked motorized-vehicle route. Understandably, vehicle access is among the most important recreation issues in the Desert. A primary consideration of the recreation program, therefore, is to ensure that access routes necessary for recreation enjoyment are provided. Specific route identification, as outlined in the Motorized-Vehicle Access Element, will be initiated upon adoption of this Plan* (BLM 1994).

Northern and Eastern Colorado Desert Coordinated Management Plan (2002)

The Northern and Eastern Colorado Desert Coordinated Management Plan (NECO Plan) is one of six amendments to the CDCA Plan, discussed in more detail in Section 3.17 (Special Designations).

Federal Aviation Administration Regulations (14 CFR 77)

Title 14 CFR Section 77 contains standards for determining physical obstructions to navigable airspace. Form 7460-1, Notice of Proposed Construction or Alteration, must be filed with the Federal Aviation Administration (FAA) if an object to be constructed has the potential to affect navigable airspace according to these standards.

Federal Transportation Regulations (49 CFR, Subtitle B)

Title 49 CFR, Subtitle B, contains procedures and regulations pertaining to interstate and intrastate transport, including hazardous materials program procedures, and provides safety measures for motor carriers and motor vehicles that operate on public highways.

California Vehicle Code

The California Vehicle Code contains regulations applicable to roadway damage; licensing, size, weight, and load of vehicles operated on highways; safe operation of vehicles; and the transportation of hazardous materials.

California Streets and Highways Code

The California Streets and Highways Code specifies that permits issued by the California Department of Transportation (Caltrans) be required for any roadway encroachment during truck transportation and delivery, as well as for any load that exceeds Caltrans's weight, length, or width standards for public roadways.

County of Riverside General Plan and Desert Center Area Plan

The policies of the Desert Center Area Plan (DCAP; Riverside County 2003) were developed for the Desert Center area in accordance with the vision and policies of the County of Riverside General Plan (Riverside County 2003). The DCAP contains specific policies related to the vehicular circulation system, airports, and scenic highways that are relevant to the proposed project and alternatives.

Riverside County Circulation Element Policy C2.1 requires the County to maintain a countywide target level of service (LOS) of LOS "C" along all County maintained roads and conventional state highways.

County of Riverside Congestion Management Plan

Riverside County's Congestion Management Plan (CMP) specifies that all CMP roadways operate at a Level of Service of "E" or better. All state highways and principal arterials are CMP roadways. I-10 and SR-177 are the only CMP roadways in the project study area.

3.18.2 Existing Conditions

This section provides a discussion of the transportation system in the vicinity of the proposed project and alternatives. The section includes a discussion of roads, traffic, airports, railways, bicycle facilities, and public transportation.

A traffic study was conducted for the Desert Sunlight Solar Farm (DSSF) project (BLM 2011; incorporated by reference in Section 1.11) which would be developed at a site adjacent to the

proposed solar facility site. An additional traffic study was conducted for the DHSP in December 2011. This includes some traffic that is caused by preliminary construction for the DSSF project. The environmental baseline for the proposed project and alternatives includes only the preliminary construction of the DSSF project that had been completed in September 2011. The DSSF project EIS estimated 204 daily employee trips (one-way) and 33 daily construction equipment trips during project construction and those trips are incorporated into the environmental baseline for this EIS.

Roads and Intersections

Roads in the project study area are limited due to the remoteness and lack of development in the area. The primary roads in the vicinity of the proposed project and alternatives are summarized in Table 3.18-1 and described below.

Table 3.18-1. Roads In the Project Area

Road	Generation Direction	Condition	Jurisdiction
I-10	East-west	Major road	Caltrans
SR-177	Northeast-southwest	Major road	Riverside County
Kaiser Road	North-south	Major road	Riverside County
Eagle Mountain Road	North-south	Minor road	Riverside County
Power Line Road	Northeast-southwest	Maintained dirt	Riverside County
Phone Line Road	North-south/east-west	Maintained dirt	Riverside County
Kaiser Steel Road	East-west	Unmaintained dirt	Private
Aztec Avenue	East-west	Minor road	Riverside County
Airport Access Road	East-west	Maintained dirt	Private
Corn Springs Road	Northeast-southwest	Maintained dirt	BLM
Chuckwalla Valley Road	Northwest-southeast	Minor road	Riverside County

Source: BLM 2011.

Interstate 10 (I-10)

I-10 is an east-west interstate with a western terminus in Santa Monica, California, and an eastern terminus in Jacksonville, Florida. In the project study area it has two lanes of travel in each direction. The Annual Average Daily Traffic for I-10 in the project study area was 25,000 in 2010.

State Route 177 (SR-177)

SR-177 is a predominantly north-south road that provides access from Kaiser Road to I-10. It is also known as Desert Center Rice Road, although it will be referred to as SR-177 in this EIS. In the vicinity of the DHSP it is paved with centerline and edge-of-pavement markings, and has one lane of travel in each direction.

Kaiser Road

Kaiser Road would be the primary access road to the proposed solar facility. It is paved, has one lane of travel in each direction and a centerline stripe. It is a predominantly north-south road

with a southern terminus at SR-177 in Desert Center and a northern terminus at the Eagle Mountain Mine.

Aztec Avenue

Aztec Avenue is an east-west road with a western terminus at SR-177 that runs along the southern frontage of I-10 for approximately 1 mile, where it intersects an unimproved pipeline patrol road.

Airport Access Road

This road provides access to the former Desert Center Airport (now a private special-use airport) from SR-177.

Corn Springs Road

Corn Springs Road is an unpaved northeast-southwest road with a northern terminus at Chuckwalla Valley Road and a southern terminus in undeveloped BLM-administered land.

Chuckwalla Valley Road

Chuckwalla Valley Road is a paved road accessed from I-10 approximately 9 miles east of Desert Center.

Eagle Mountain Road

Eagle Mountain Road is primarily a north-south road with a southern terminus just south of I-10 and the Eagle Mountain exit and a northern terminus at the Eagle Mountain townsite.

Power Line Road

Power Line Road is a maintained dirt road that runs northeast-southwest and connects with Kaiser Road. The road parallels Metropolitan Water District of Southern California (MWD) transmission and distribution lines. Off-highway vehicles (OHV) are allowed on this road.

Phone Line Road

Phone Line Road is a maintained dirt road that intersects Power Line Road near Eagle Mountain Road, runs north-south, and then turns northeast at the Eagle Mountain townsite. OHVs are allowed on this road.

Kaiser Steel Road

Kaiser Steel Road is a private east-west unmaintained dirt road owned by Kaiser Ventures. The road parallels an existing Kaiser Ventures distribution line and is used to access two water wells east of the solar facility site. OHVs are allowed on this road west of the intersection with Power Line Road.

Other Roads

Several smaller unpaved and unmaintained local roads or routes have been documented in the project vicinity.

Intersections

The following intersections are the primary intersections that would be traversed by construction traffic associated with the proposed solar facility:

- SR-177 and the I-10 eastbound off-ramp;
- SR-177 and the I-10 westbound off-ramp; and
- SR-177 and Kaiser Road.

Turning movements at these intersections are controlled by stop or yield signs, as appropriate. None of the intersections are signalized.

Existing Level of Service

LOS is a measure of congestion as experienced by motorists. LOS is generally described in terms of travel time and speed, freedom to maneuver, traffic interruptions, comfort, and convenience. The LOS applies quantifiable traffic measurements, such as intersection delays, to provide a qualitative assessment of motorists' perception of and satisfaction with traffic conditions. LOS is designated by the letters "A" through "F" with "A" for most favorable and "F" for least favorable, with each letter representing a range of conditions. For unsignalized intersections, LOS is reported for the vehicle movement controlled by a stop or yield sign (i.e., LOS is not reported for the intersection as a whole, or for vehicles that do not have to stop). LOS definitions for unsignalized intersections are provided in Table 3.18-2.

Table 3.18-2. Interrupted Traffic Flow Facilities Level of Service

LOS	Qualitative Delay	Quantitative Delay (seconds/vehicle)
A	Low control delay	≤ 10
B	Short traffic delays	> 10 and ≤ 20
C	Average traffic delays	> 20 and ≤ 35
D	Long traffic delays	> 35 and ≤ 55
E	Very long traffic delays	> 55 and ≤ 80
F	Extreme delays potentially affecting other traffic movements in the intersection	> 80

Source: RCTLMA 2003

The LOS of intersections and roadway segments in the project study area and the delay in seconds upon which the LOS calculation is based are presented in Table 3.18-3.

Table 3.18-3. Existing Level of Service and Delay at Project Intersections

AM Peak Hour	LOS[1]	Delay[2] (seconds)
SR-177 and I-10 Eastbound	A	9.0
SR-177 and I-10 Westbound	A	9.1
SR-177 and Kaiser Road	A	8.5
PM Peak Hour		
SR-177 and I-10 Eastbound	A	9.3
SR-177 and I-10 Westbound	A	9.7
SR-177 and Kaiser Road	A	8.8

1 - Includes traffic from construction of Desert Sunlight Solar Farm project.
2 - Includes delay from construction of Desert Sunlight Solar Farm project.
Source: HKA 2011, see Appendix H.

The DCAP includes the following policy regarding LOS:

> *"DCAP 6.2 Maintain the County's roadway Level of Service standards as described in the Level of Service section of the General Plan Circulation Element" (Riverside County 2003).*

LOS "C" or better is the County standard according to the Riverside County General Plan Circulation Element. LOS "D" or "E" may be acceptable on some types of roads when special circumstances exist (Riverside County 2003).

Airports and Airspace

There are no airports within the project study area. A landing strip owned by Kaiser Industries and associated with Eagle Mountain is airports within the project study area. A landing strip owned by Kaiser Industries and associated with Eagle Mountain is located 0.5 miles west of the proposed solar facility (Eagle Crest Energy Company 2008). It was not listed in a database of airports in the U.S. and is assumed to see little, if any, traffic (AirNav 2010).

The Desert Center Airport (FAA Identifier L64) was previously located approximately 5 miles northeast of Desert Center, California, south of SR-177 and immediately north of Alternative D. It was a public general aviation airport that saw little traffic. Recently, Riverside County sold the airport to a private firm, Chuckwalla Valley Associates, LLC. The 4,200-foot airport runway continues to operate as a private special-use airport (and includes a racetrack). The 4,200-foot runway is surrounded by an influence area that extends 1,750 feet from the runway in all directions (County of Riverside Planning Department Staff Report 2009).

The DCAP includes the following policy, which may require amendment due to the recent conversion of the airport from a public airport to a private special-use airport:

> *DCAP 3.1 To provide for the orderly development of Desert Center Airport and the surrounding area, comply with the Airport Land Use Compatibility Plan for Desert Center Airport as fully set forth in Appendix L and as summarized in Table 4, as well as any applicable policies related to airports in the Land Use, Circulation, Safety and Noise Elements of the Riverside County General Plan* (Riverside County 2003).

The nearest public airport is the Chiriaco Summit Airport, which is located 21.5 miles west-southwest of the proposed solar facility site, along I-10.

The proposed project and alternatives would overlap several low-level military flight paths (State of California 2000). The proposed project and alternatives would overlap a Department of Defense area where consultation with the military is required to ensure that construction does not interfere with low-level flight operations (BLM 2011).

Railways

There are no railways in the project study area. The nearest railway is the Eagle Mountain railroad, which runs north from I-10 to Eagle Mountain. The railroad may be used in the future to transport nonhazardous solid waste to the proposed Eagle Mountain Landfill (Riverside County 2003).

Bicycle Routes

There are no bicycle routes or facilities such as designated bicycle lanes on the roads discussed in this section (Riverside County 2003). No bicycles were observed during the traffic counts on February 17, 2010 (BLM 2011); however, it is likely that cyclists use area roads.

Public Transportation

Greyhound Bus service and potentially other commercial bus lines provide public transportation eastbound and westbound on I-10. There is no public transportation in Desert Center, on SR-177, or on Kaiser Road (Riverside County 2003).

Public Access

Public access refers to the legal rights of citizens to access public land for certain purposes without barriers or impediments. The affected environment related to public access includes recreational use of land by the public as well as other legal guarantees or limitations on access such as deeds, right-of-way, easements, leases, licenses, and permits.

The majority of the project study area is remote, vacant, and undeveloped with few apparent uses by the public. A review of 2011 aerial photographs revealed no obvious evidence of public use or land development within the project study area other than a small number of roads and transmission lines (Google Earth 2011). The roads in the project study area have been previously discussed in this section.

3.19 VISUAL RESOURCES

Visual resources refer to visual considerations in the physical environment. Visual resources analysis is a systematic process to logically assess visible change in the physical environment and the anticipated viewer response to that change. The visual resources section describes the existing landscape character and visual quality of the project study area, existing views of the proposed project and alternatives from various on-the-ground vantage points, the visual characteristics of the proposed project and alternatives, and the landscape changes that would be associated with the construction, operation, and decommissioning of the Desert Harvest Solar Project (DHSP) as seen from various vantage points. This section also describes the regulatory settings associated with the construction and operation of the proposed project or its alternatives with respect to visual resources in the project study area. A description of the visual resources in the project study area follows the discussion of applicable plans, policies, and regulations below. The project study area for visual resources encompasses all areas within the viewshed of the proposed project and alternatives that could be visually affected by construction, operation, and decommissioning of the DHSP.

3.19.1 Applicable Plans, Policies, and Regulations

Public agencies and planning policy establish visual resource management objectives in order to protect and enhance public scenic resources. Goals, objectives, policies, and implementation strategies and guidance are typically contained in resource management plans, comprehensive plans and elements, and local specific plans as described below.

California Desert Conservation Area

Covering more than 25 million acres, the geologically diverse California Desert Conservation Area (CDCA) includes sand dunes, canyons, dry lakes, mountain ranges, and wilderness areas. The project study area is within the CDCA, which was established, in part, to protect the area's scenic resources that are located adjacent to a population center. The BLM manages approximately 12 million acres in the CDCA. The CDCA Plan did not include BLM Visual Resource Management (VRM) classes. However, a BLM-authorized Visual Resource Inventory (VRI) covering portions of the Chuckwalla Valley was conducted in 2010 and includes the area of the proposed project and alternatives. The inventory results are described in Section 3.19.2 (Existing Conditions).

In the CDCA Plan, the location of the DHSP includes land that is mostly classified as Multiple-Use Class (MUC) M (Moderate Use) and some classified as MUC L (Limited Use). The BLM's CDCA Plan defines the classes as follows.

- Class L (Limited Use)—These lands are managed to protect sensitive, natural, scenic, ecological, and cultural resource values. They provide for generally lower-intensity, carefully controlled multiple uses that do not significantly diminish resource values.
- Class M (Moderate Use)—These lands are managed in a controlled balance between higher-intensity use and protection. A wide variety of uses such as mining, livestock grazing, recreation, energy, and the development of new utility facilities are allowed.

Federal Land Policy and Management Act

The Federal Land Policy and Management Act (FLPMA) mandates protection of scenic values. In order to meet its responsibility to maintain the scenic values of public lands, BLM developed a VRM System. BLM's VRM policy is set forth in Manual 8400-1 (BLM 1984), with guidance provided in handbooks H-8410-1 Visual Resource Inventory (BLM 1986a) and H-8431-1 Visual Resource Contrast Rating (BLM 1986b). Additional guidance is contained in BLM Washington Office Instruction Memorandum 2009-167, Application of the Visual Resource Management Program to Renewable Energy.

FLPMA requires coordination with local planning (Title II, Sec. 202 (b)(9)). Portions of projects on private land are subject to local planning.

Visual Resource Management System

The objective of the VRM System is to uphold the BLM's stewardship responsibilities to identify and manage the visual resources present on public lands as required by FLPMA and NEPA. The VRM System consists of three components: VRI, designation of VRM classes during the land use planning or plan amendment process, and Visual Resource Contrast Rating System (VRCR — which is discussed in Section 4.19.1, Environmental Consequences).

Visual Resource Inventory

The inventory stage involves identifying the visual resources of an area and assigning them to inventory classes using the BLM's VRI process. The process involves rating the visual appeal of a tract of land, measuring public concern for scenic quality, and determining whether the tract of land is visible from travel routes or observation points. A description of each inventory class is presented in Table 3.19-1. The process is described in greater detail in Appendix G-1 and Handbook H-8410-1, Visual Resource Inventory (BLM 1986a). A Scenic Quality Rating form for the project study area is presented in Appendix G-3.

Visual resource inventory classes are assigned through the inventory process. Class I is assigned to those areas where a management decision has been made previously to maintain a natural landscape. This includes areas such as national wilderness areas, the wild section of national wild and scenic rivers, and other congressionally and administratively designated areas where decisions have been made to preserve a natural landscape. Classes II, III, and IV are assigned based on a combination of scenic quality, sensitivity level, and distance zones. This is accomplished by combining the 3 overlays for scenic quality, sensitivity levels, and distance zones and using the guidelines shown in Illustration 11 to assign the proper class. The end product is a visual resource inventory class overlay as shown in Illustration 12. Inventory classes are informational in nature and provide the basis for considering visual values in the RMP process. They do not establish management direction and should not be used as a basis for constraining or limiting surface disturbing activities.

Visual Resource Management Objectives

VRM objectives are established in resource management plans (RMP). VRM decisions consider visual values established by the VRI along with land use allocations, desired outcomes, and future desired conditions. The management classes may differ from inventory classes based on management priorities for land uses and compatibility with land use allocations.

For the project study area, an Interim VRM Class IV objective has been established. Interim visual management classes are established where a project is proposed and there are no RMP-approved VRM objectives. These classes are developed using the VRI process and must conform to the land use allocations set forth in the RMP covering the project area (the CDCA Plan for the DHSP).

The interim objectives serve as the baseline for plan conformance, while the underlying VRI remains the baseline for determining actual physical impacts on the visual resources of the area.

Table 3.19-1. Bureau of Land Management Visual Resource Management Class Descriptions

Class	Description
I	Objective: Preserve landscape character. This class provides for natural ecological changes but does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.
II	Objective: Retain existing landscape character. The level of change to the characteristic landscape should be low. Management activities may be seen but should not attract a casual observer's attention. Any changes must repeat the basic elements of line, form, color, and texture found in the predominant natural features of the characteristic landscape.
III	Objective: Partially retain existing landscape character. The level of change to the characteristic landscape should be moderate (or lower). Management activities may attract attention but should not dominate a casual observer's view. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.
IV	Objective: Provide for management activities that require major modification of the landscape character. The level of change to the characteristic landscape can be high. Management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repetition of the basic landscape elements.

Source: BLM 1986a

Scenic Roadway Programs

After a review of applicable planning and management documents, no officially designated or eligible California Department of Transportation state scenic highways were identified in the project study area. Although there are no state-designated or state-eligible scenic highways, there is a county-eligible scenic highway in the project study area. I-10, a Riverside County-eligible scenic highway, passes through the Desert Center area, affording views of the contrasting desert and mountainous terrain (LSA Associates, Inc. 2000). The stark contrast between sparsely vegetated desert flat lands and rocky mountainous terrain is pronounced in the Desert Center area. The visual landscape seen from I-10 in the vicinity of Desert Center is described further in Section 3.19.2 (Existing Conditions).

Riverside County General Plan

The Riverside County General Plan's Land Use (LU) Element contains the following policies involving visual resources that are applicable to the project study area (Riverside County 2003).

- LU 4.1 requires that new developments be located and designed to visually enhance, not degrade, the character of the surrounding area. Consideration should be given to preserving natural features such as unique natural terrain, drainage ways, and native vegetation wherever possible, particularly where they provide continuity with more extensive regional systems.
- LU 13.1 preserves and protects outstanding scenic vistas and visual features for the enjoyment of the traveling public.

- LU 13.3 ensures that the design and appearance of new landscaping, structures, equipment, signs, or grading within designated and eligible state and county scenic highway corridors are compatible with the surrounding scenic setting or environment.
- LU 13.5 requires new or relocated electric or communication distribution lines, which would be visible from designated and eligible state and county scenic highways, to be placed underground.
- LU 13.8 seeks to avoid the blocking of public views by solid walls.
- LU 20.1 requires that structures be designed to maintain the environmental character in which they are located.
- LU 20.2 requires that development be designed to blend with undeveloped natural contours of the site and avoid an unvaried, unnatural, or manufactured appearance.
- LU 20.4 ensures that development does not adversely impact the open space and rural character of the surrounding area.

The Desert Center Area Plan (DCAP) contains the following policies involving visual resources that are applicable to the project study area (Riverside County 2003).

- DCAP 2.3 assures that the design of new land uses subject to discretionary review visually enhances, and does not degrade, the character of the Desert Center region.
- DCAP 5.1 requires that outdoor lighting use fixtures that minimize effects on the nighttime sky and wildlife habitat areas, except as necessary for security reasons.
- DCAP 9.1 protects the scenic highways within the DCAP from change that would diminish the aesthetic value of adjacent properties through adherence to the policies found in the Scenic Corridors sections of the General Plan Land Use, Multipurpose Open Space, and Circulation Elements.
- DCAP 9.2 supports the designation of I-10 as an eligible, and subsequently, official scenic highway, in accordance with the California State Scenic Highway Program.
- DCAP 10.1 encourages clustering of development for the preservation of contiguous open space.

3.19.2 Existing Conditions

Visual Resource Inventory for the Project Area

The inventory consists of a scenic quality evaluation, sensitivity level analysis, and delineation of distance zones. Based on these three factors, BLM-administered lands are placed into one of four VRI classes. These inventory classes represent the relative value of the visual resources and are described in Table 3.19-1 above. The VRI Class, along with the Multiple Use Classifications (MUCs) and associated allowable projects, are used to determine interim VRM class designations.

A VRI covering the Palm Springs/South Coast Field Office planning area was conducted in 2010 as a part of the BLM's Solar Programmatic EIS effort and includes portions of the Chuckwalla Valley and the project study area. The 2010 VRI is considered to be the baseline for visual resource effects analysis. The Scenic Quality Field Inventory sheet for the 2010 inventory is presented in Appendix G-3.

Scenic Quality

Scenic quality is a measure of the overall impression or appeal of an area created by the physical features of the landscape such as natural features (landforms, vegetation, water, color, adjacent scenery, and scarcity) and built features (roads, buildings, railroads, agricultural patterns, and utility lines). These features create the distinguishable form, line, color, and texture of the landscape composition that can be judged for scenic quality using criteria such as distinctiveness, contrast, variety, harmony, and balance. The scenic quality of the Chuckwalla Valley is characterized by a vast, low, gently rolling valley bottom; some variety of vegetation (one or two major types); no water; subtle color variations; and some color contrast in soil and vegetation. The majority of the central valley floor is not substantially influenced by built cultural features (structures) though private development does punctuate the valley's landscape. The DHSP site is also surrounded by the ridges of the Eagle Mountains to the west, Coxcomb Mountains to the east, and Chuckwalla Mountains to the south, which provide backdrops of visual interest. Therefore, the project study area received a Scenic Quality Classification of B.

Sensitivity Levels

Sensitivity levels are a measure of public concern for scenic quality. Public lands are assigned high, medium, or low sensitivity levels by analyzing the various indicators of public concern. Factors considered in a sensitivity level analysis include type of users, amount of use, public interest, adjacent land uses, special areas, and any other factors that include visual sensitivity issues. According to the VRI, the sensitivity level of the Chuckwalla Valley is influenced by high volumes of traffic on I-10, much of which is recreational in nature; modest recreational use; high public interest and special sensitivity imparted by the Congressional designation of the CDCA; encirclement by designated wilderness areas to the north, south, east, and west including JTNP to the west, north, and east; low amounts of traffic on secondary and BLM roads; energy corridors; and private land development. The BLM has received consistent feedback from the public that scenery is one of the most prized values of the CDCA. Congress also noted scenery as one of the values of the California Desert when the CDCA was established. Also, the project study area is surrounded by the scenic landscapes of JTNP (including the Joshua Tree Wilderness Area) and Chuckwalla Mountains Wilderness Area. While use levels in these areas are low, the remote and isolated character of the landscape and the access to unencumbered, panoramic views of the region are attributes that are highly valued by its users. As such, these users are likely to be highly sensitive to visual changes in adjacent landscapes that are visible from wilderness areas. As a result, the DHSP site received an overall high sensitivity level rating primarily due to high public interest, presence of special areas, and high volumes of traffic on I-10 with views to the DHSP site.

Distance Zones

Landscapes are subdivided into three distance zones based on relative visibility from travel routes or observation points. The three zones are foreground/middleground, background, and seldom seen. The foreground/middleground zone includes areas seen from highways, rivers, or other viewing locations that are less than three to five miles away. Areas beyond the foreground/middleground zone, but usually less than 15 miles away, are in the background zone. Areas not seen as foreground/middleground or background (i.e., hidden from view) are in the seldom seen zone. Distance zones are determined in the field by actually traveling along each route and

observing the area that can be viewed. The DHSP site is in the foreground/middleground distance zone for most viewer groups, which are described below under Setting. For recreational users in the surrounding wilderness areas, the DHSP-viewing distance zone would range from foreground/middleground to background depending on the location of the recreational users in the surrounding wilderness areas.

VRI Classification

Based on the combination of the scenic quality, sensitivity levels, and distance zones, the DHSP site in the northern Chuckwalla Valley was assigned a VRI Class II. The scenic quality, sensitivity levels, and distance zones are further described below under Setting.

VRM Classification

The VRI class, along with the project's consistency with the allowable uses in the associated MUCs, are used to assign an interim VRM class to the immediate site. BLM lands south of I-10 and northeast of Desert Center are designated MUC L. This designation is intended to protect sensitive, natural, scenic, ecological and cultural resource values. Public lands designated as Class L are managed to provide for generally lower intensity, carefully controlled multiple use of resources, while ensuring that sensitive values are not significantly diminished. This class does allow for projects such as DHSP where a site by site analysis shows conformance with the overall MUC class objectives. BLM lands north of I-10 are designated MUC M. This designation is intended to provide for a controlled balance between higher intensity use and the protection of public lands. This class provides for a wide variety of present and future uses such as mining, livestock grazing, recreation, energy, and utility development. The immediate project area is assigned an interim visual management Class IV designation. As previously described, the Class IV management objective is:

> *Provide for management activities that require major modification of the landscape character. The level of change to the characteristic landscape can be high. Management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repetition of the basic landscape elements.*

Note that this interim VRM class assignment applies only to this specific project footprint. Any other projects would need to be analyzed and assigned an interim VRM class on a case by case basis based on an analysis of their conformance with land use plan objectives. Also, as discussed in Chapter 4, the BLM will require that all relevant and reasonable mitigation measures be employed to reduce project contrast to moderate levels (commensurate with Class III VRM objectives), except for those specific project components and from those specific KOPs where it can be demonstrated that, even with mitigation, the project still has a high degree of contrast.

Regional Setting

The Chuckwalla Valley is a broad, predominantly natural appearing, enclosed landscape surrounded on most sides by dramatic mountain ranges, and includes scattered dry lakes and rolling sand dunes. The surrounding mountains offer dramatic relief to the landscape and contain more diverse vegetation. The mountains can be more than 1,000 feet higher than the valley floor. The

DHSP site is mostly bounded by ridgelines of the Eagle Mountains, Coxcomb Mountains, and Chuckwalla Mountains, except on the southeast and a small area on the southwest. The Joshua Tree Wilderness Area and Chuckwalla Mountains Wilderness Area are in these mountains.

The broad Chuckwalla Valley is generally flat with localized areas of erosion and gently rolling terrain. The landscape is horizontal with vast open space. The terrain has light brown to buff-colored soils and rock. The valley floor is smooth. Vegetation is rounded, clumpy, and mottled in form and follows the line of the terrain. Vegetation colors are tan, brown, green, and dark green. The texture of the vegetation is moderately coarse consisting of grasses, creosote bushes, and isolated clusters of palm trees. The primary source of permanent water is the Colorado River Aqueduct.

Clusters of buildings and structures are found along I-10 at Desert Center, Lake Tamarisk, and the landing field southwest of the Desert Lily Sanctuary. The former Kaiser iron ore mining facility, which also has clusters of mostly vacant housing, is northwest of Lake Tamarisk and the proposed project. Other dispersed development such as residences, utility poles, and substations also punctuate the landscape.

Residences at Lake Tamarisk and vehicles using the roadways are the primary sources of artificial light. One of the attractions for residents in less developed areas of the county is the brilliance of the nighttime sky on clear nights, unencumbered by lighting scattered over a large urban area. Residents also value certain wildlife that prefer habitat areas where there is little artificial lighting.

Project Viewshed

The project viewshed is defined as the areas and locations from which the proposed project and alternatives could be seen and encompasses much of the Chuckwalla Valley and portions of the surrounding mountains identified above. Delineation of the viewshed from the sites of the proposed project and alternatives must extend from the top elevation of all of the proposed facilities at the sites, expanded to 5.5 feet above the ground of the visible horizon. Mountains surrounding the DHSP site limit the viewshed to generally less than 15 miles from the project facilities. Consequently, the project study area is mostly bounded by ridgelines (of the Eagle Mountains, Coxcomb Mountains, and Chuckwalla Mountains), except on the southeast and a small area on the southwest. Figures 3.19-1A through 1C present viewshed maps for both low-profile and high-profile solar panels and for the transmission structures. However, these viewshed maps are based solely on terrain models that do not account for possible vegetation or structural screening.

Most scenic vistas involving the DHSP site are from viewpoints along I-10, along State Route (SR-) 177, in Desert Center and Lake Tamarisk, and from surrounding ridgelines in Joshua Tree Wilderness, though these locations are more difficult to access.

Viewer groups of the DHSP site include dispersed recreational users in the surrounding mountains and the valley floor; nearby residents in Lake Tamarisk; dispersed private land/visitor-serving businesses in Desert Center; and roadway traffic on Kaiser Road, SR-177, and I-10. The majority of views of the area of the proposed project and alternatives are from Lake Tamarisk and along SR-177 and I-10 on the valley floor. Views of the site from the valley floor are fairly horizontal because the valley floor is relatively flat. A higher angle of view of the site is available from the surrounding mountains and wilderness areas. Although limited by access and lack of trails or

facilities, backcountry recreationists do access the surrounding mountains and would be afforded elevated perspectives of the northern Chuckwalla Valley in general and the DHSP site as well.

The duration of views depends on the viewer group. Stationary viewer groups (such as those in nearby residences and visitor-serving businesses) and slow-moving viewer groups (such as certain dispersed recreational users) have more time to view the project site. Fast-moving viewer groups (such as motorists in roadway traffic) have less time to view the project site but the openness of the landscape can still afford extended view durations even for freeway (I-10) travelers. Due to the relatively undeveloped nature of the DHSP site, direct views of it are primarily influenced by topography because there are few obstructions (such as walls, buildings, and vegetation) capable of blocking them, though some grade-level views are obscured by roadside vegetation.

As discussed above under Scenic Roadway Programs, I-10 is a Riverside County-eligible scenic highway and runs past the Desert Center area, affording views of the contrasting desert and mountainous terrain. General panoramic vistas of high quality also exist from other roadways such as SR-177 and Kaiser Road. As discussed elsewhere in this EIS, traffic volumes are light on SR-177 and on Kaiser Road in the project study area. Peak hour volume on I-10 near the intersection with SR-177 is between 2,800 and 3,000 vehicles. Approximately 26,500 vehicles use I-10 daily.

Linear Viewpoint Analysis

In contrast to stationary views at specific Key Observation Points (KOPs), which are discussed later in this section, transient project views from roadways are variable and range from unobstructed to completely screened (typically by roadside vegetation or structures) as illustrated in Figure 3.19-2, which presents a linear viewpoint analysis of the solar facility alternatives (not including the gen-tie alternatives) from the three main roadways in the project area – Kaiser Road, SR-177, and I-10. As shown in Figure 3.19-2, the quality of solar facility are color coded and include views up to 90 degrees off the direction of travel. Project visibility is not considered when the angle of view exceeds 90 degrees off the direction of travel. The outer limits of the color coding indicate the point in that particular direction of travel where the solar facility first becomes noticeable in the greater field of view.

As shown in Figure 3.19-2, **Northbound Kaiser Road** provides 6 miles of potential solar facility views, which, at an average travel speed of 55 miles per hour (mph), are covered in 6.5 minutes. Of those 6 miles of potential solar facility visibility (theoretically visible if not screened from view), 0.6 mile of road (or 10 percent and shown in red on the map) has unobstructed views of the solar facility site and is traveled in slightly more than 1.5 minutes. Approximately 1.5 miles of road (or 25 percent and shown in orange on the map) have partially obstructed views of the solar facility site due to screening by intervening vegetation and are traveled in approximately one and a half minutes cumulatively (multiple road segments). Approximately 2.7 miles of road (or 45 percent and shown in yellow on the map) have only limited views of the solar facility site due to screening by intervening vegetation and are traveled in approximately three minutes cumulatively (multiple road segments). Approximately 1.2 miles of road (or 20 percent and shown in green on the map) are screened by intervening vegetation and, thus, have no view of the solar facility site and are traveled in 1.3 minutes. Thus, a substantial

portion (65 percent) of northbound Kaiser Road in the project study area has limited to no views of the solar facility site.

Southbound Kaiser Road provides 4.7 miles of potential solar facility views, which at an average travel speed of 55 mph are covered in 5 minutes. Of those 5 miles of potential solar facility visibility, all 5 miles of road (or 100 percent and shown in orange on the map) have only partially obstructed views of the solar facility site and are traveled in 5 minutes. Therefore, southbound Kaiser Road in the project study area is substantially exposed to the solar facility site with predominantly unobstructed views.

Northbound SR-177 provides 5.7 miles of potential solar facility views, which at an average travel speed of 55 mph are covered in 6.25 minutes. Of those 5.7 miles of potential solar facility visibility, approximately 1.8 miles of road (or 32 percent and shown in red on the map) have unobstructed views of the solar facility site, and are traveled in 2 minutes. Approximately 3.2 miles of road (or 56 percent and shown in yellow on the map) have only limited views of the solar facility site due to screening by intervening vegetation, and are traveled in 3.5 minutes. Approximately 0.7 mile of road (or 12 percent and shown in green on the map) is screened by intervening vegetation and thus, has no view of the solar facility site, and is travelled in 0.75 minute. Thus, a substantial portion of northbound SR-177 in the project study area has limited to no view of the solar facility site.

Southbound SR-177 provides approximately 3.2 miles of potential solar facility views, which at an average travel speed of 55 mph are covered in approximately 3.5 minutes. Of those 3.2 miles of potential solar facility visibility, 2.5 miles of road (or 78 percent and shown in yellow on the map) have only limited views of the solar facility site due to substantial screening by roadside vegetation, and are traveled in 2.7 minutes cumulatively (multiple road segments). Approximately 0.7 mile of road (or 22 percent and shown in green on the map) is screened by intervening vegetation and thus, has no view of the solar facility site, and is travelled in approximately 0.8 minute. Thus, southbound SR-177 in the project study area has limited to no views of the solar facility site.

Eastbound I-10 provides 9.5 miles of potential solar facility views, which at an average travel speed of 70 miles per hour (mph), are covered in 8 minutes. Of those 9.5 miles of potential solar facility visibility, 1 mile of road (or 10.5 percent) is screened by intervening vegetation (shown in green) and is traveled in 1 minute cumulatively (multiple road segments). Approximately 3 miles of road (or 31.5 percent) have partially obstructed views of the solar facility (shown in orange), and are covered in approximately 2.5 minutes cumulatively (multiple road segments). Approximately 5.5 miles of road (or 58 percent) have relatively unobstructed views of the solar facility site, (shown in red) and are traveled in 4.5 minutes. Thus, a substantial portion of eastbound I-10 in the project study area has unobstructed views of the solar facility site.

Westbound I-10 provides 9.3 miles of potential solar facility views, which at an average travel speed of 70 mph are covered in 8 minutes. Of those 9.3 miles of potential solar facility visibility (theoretically visible if not screened from view), 2.1 miles of road (or 23 percent and shown in yellow on the map) have only limited views of the solar facility site due to screening by intervening vegetation, and are traveled in 1.8 minutes cumulatively (multiple road segments). Approximately 7.2 miles of road (or 77 percent and shown in red on the map) have relatively unobstructed views of the solar facility site, and are traveled in 6.2 minutes cumulatively

(multiple road segments). Thus, a substantial portion of westbound I-10 in the project study area also has unobstructed views of the solar facility site.

Key Observation Points

In consultation with the National Park Service and BLM, eight representative Key Observation Points (KOPs) were established to assess the various factors that are considered in the evaluation of a landscape's existing visual resources. KOPs were generally selected to be representative of the most critical locations from which the proposed project and alternatives would be seen and include at-grade and elevated perspectives. KOPs were located based on their usefulness in evaluating existing landscapes and potential impacts on visual resources with various levels of sensitivity, in different terrain, and from various vantage points. KOP locations for the proposed project and alternatives include: (1) along major or significant travel corridors (I-10 and SR-177); (2) at nearby recreation areas (Joshua Tree Wilderness in JTNP); (3) in the vicinity of a nearby residential community (Lake Tamarisk); and (4) local roads (Rice Road). These locations provide representative examples of the existing landscape context and viewing conditions for the DHSP and are shown on Figure 3.19-3. While additional potential KOP locations are certainly available, the number and location of the eight selected KOPs are considered adequate to fully characterize the visual impact that will be experienced in the immediate DHSP vicinity and in the broader project area. Even though KOPs are generally not located on private property (as the view is typically applicable only to a much smaller viewing population), effort is made to ensure that publicly accessibly KOPs capture the residential impacts that would occur. Also, KOPs and simulations typically focus on long-term effects and not on short-term effects, such as those that would result during the relatively short construction period. At each KOP, the existing landscape was characterized and photographed. Photographs are presented as 11-inch by 17-inch color images at "life-size scale" when viewed at a standard reading/viewing distance of 18 inches (i.e., when the report image is held at a distance of 18 inches from the eye, all landscape features in the images would appear to be the same scale and size as they would appear in the field at the viewpoint location). Photographs are presented in Appendix A. A discussion of the existing visual setting for each KOP is presented in the following paragraphs, and a summary table is presented in Appendix G-2.

KOP 1 and 1A – Joshua Tree Wilderness at the northeast extent of the Eagle Mountains – Alternatives 4, 5, 6, and 7

KOP 1/1A (KOP 1 evaluates the low profile solar panels of Alternatives 4, 5, and 6 and KOP 1A at the same location evaluates the high profile solar panels of Alternative 7) was established in Joshua Tree Wilderness on a low ridge at the northeast extent of the Eagle Mountains, at the north end of Chuckwalla Valley (see Figure 4.19-1A). This KOP was requested by the National Park Service because of the relatively high use that this area receives for geological research. This KOP is also adjacent to an access point to the eastern Pinto Basin, which is popular for Night Sky enthusiasts. The view is considered representative of solar facility views from lower elevation vantagepoints within the national park and wilderness, which surround the proposed project on the west, north, and northeast (see Figures 3.19-1A and 3.19-3). It is also representative of the more distant lower elevation view opportunities on BLM lands in the northern portion of Chuckwalla Valley.

Viewing to the south, this panoramic vista encompasses the open expanse of the northern Chuckwalla Valley, backdropped by the Chuckwalla Mountains to the south and the Eagle Mountains to the west. This area includes a foreground/middleground flat desert landscape that supports a sparse and irregular, to more uniform at distance, distribution of short grasses and shrubs of subdued color consisting of tans, browns, and muted greens. Although the rugged and visually interesting landforms of the Eagle and more distant Chuckwalla Mountains provide a backdrop of visual interest, the desert basin landscape is relatively non-descript and common to much of the Chuckwalla Valley. The applicable Scenic Quality Classification is C. Viewer Sensitivity is high because these lands are within the CDCA and are within the foreground/middleground viewsheds of Kaiser Road, SR-177 (Rice Road), the community of Lake Tamarisk, the Desert Lily Sanctuary ACEC, and Joshua Tree Wilderness in both the Eagle and Coxcomb mountains. The applicable interim VRM Class Rating is IV.

KOP 2 – Joshua Tree Wilderness along the western flank of the Coxcomb Mountains – Alternatives 4, 5, and 6

KOP 2 was established in Joshua Tree Wilderness along the western flank of the Coxcomb Mountains, approximately 3.5 miles northeast of the solar facility alternatives (see Figure 4.19-2A). This KOP was requested by the National Park Service because it would provide an elevated perspective of the solar facility alternatives that would be more typical of the elevated vantagepoints in the Joshua Tree Wilderness that surrounds the northern Chuckwalla Valley and elevated vantagepoints in Chuckwalla Wilderness to the south. Also, it would provide a more accurate assessment of the project's impacts on the wilderness values. This KOP location was chosen by the National Park Service as a location from which to prepare a time-lapse visual simulation of any glare or glint associated with the DHSP tracking panels while in motion from east to west.

Viewing to the southwest, this panoramic vista and elevated overlook of the northern Chuckwalla Valley also encompasses the Chuckwalla Mountains to the south and the Eagle Mountains to the west. This elevated view captures the variety of colors that are manifested in the soils, rocks, vegetation, and erosional patterns of the Chuckwalla Valley floor. The angular to low horizontal and rugged forms of the background Chuckwalla and Eagle Mountains provide features of additional visual interest. While some localized areas of ground disturbance are noticeable at this middleground viewing distance, they are not prominent features and the landscape is predominantly natural in appearance, though relatively non-descript and common to much of the Chuckwalla Valley. The applicable Scenic Quality Classification is C. Viewer Sensitivity is high because these lands are within the CDCA and are within the foreground/middleground viewsheds of Kaiser Road, SR-177 (Rice Road), the community of Lake Tamarisk, the Desert Lily Sanctuary ACEC, and Joshua Tree Wilderness in both the Eagle and Coxcomb Mountains. The applicable interim VRM Class Rating is IV.

KOP 3 – Kaiser Road in the Immediate Vicinity of the Solar Facility – Alternatives 4, 5, and 6

KOP 3 was established on Kaiser Road in the immediate solar facility vicinity, and is representative of views of the low-profile solar facility alternatives along both northbound and southbound Kaiser Road (see Figure 4.19-3A). Kaiser Road provides the principal access into the northern portion of Chuckwalla Valley and to Joshua Tree National Park and Wilderness, north of Chuckwalla Valley. There are numerous possible viewpoints with varying viewing distances to Alter-

native 4 along Kaiser Road — some providing distant viewing perspectives and some providing close proximity viewing perspectives. While it is understood that viewpoints closer to the solar facility will experience greater visual contrast, and viewpoints that are farther away from the project facilities will experience lesser visual contrast, KOP 3 was considered a reasonable compromise in viewpoint location along Kaiser Road. Viewing to the east, this view encompasses the open expanse of a central portion of the Chuckwalla Valley backdropped by the southern extent of the Coxcomb Mountains and the more distant Palen Mountains. This area includes a foreground/middleground flat desert landscape that supports a sparse and irregular, to more uniform at distance, distribution of short grasses and shrubs of subdued color consisting of tans, browns, and muted greens. The rugged and visually interesting landforms of the nearby Coxcomb Mountains and more distant Palen Mountains provide a backdrop of visual interest. The applicable Scenic Quality Classification is B. Viewer Sensitivity is high because these lands are within the CDCA and are within the foreground/middleground viewsheds of Kaiser Road, SR-177 (Rice Road), the community of Lake Tamarisk, the Desert Lily Sanctuary ACEC, and Joshua Tree Wilderness in both the Eagle and Coxcomb mountains. The applicable interim VRM Class Rating is IV.

KOP 3A – Kaiser Road in the Immediate Vicinity of the Alternative 7 Solar Facility – Alternative 7

KOP 3A was established immediately adjacent to KOP 3 on Kaiser Road in the immediate vicinity of the Alternative 7 solar facility, but the view orientation is to the northeast instead of the east in order to better capture the setting for the high profile solar panels of Alternative 7. This location is representative of views of Alternative 7 along both northbound and southbound Kaiser Road in the vicinity of the Alternative 7 solar facility (see Figure 4.19-3C). Kaiser Road provides the principal access into the northern portion of Chuckwalla Valley and to Joshua Tree National Park and Wilderness, north of Chuckwalla Valley. There are numerous possible viewpoints with varying viewing distances to the solar facility along Kaiser Road — some providing distant viewing perspectives and some providing close proximity viewing perspectives, and as shown in the linear viewpoint analysis presented in Figure 3.19-2, visibility of the solar facility site can be quite variable depending on the presence or absence of intervening screening (vegetation, landforms, structures). While it is understood that viewpoints closer to the solar facility will experience greater visual contrast, and viewpoints that are farther away from the project facilities will experience lesser visual contrast, KOP 3A was considered a reasonable compromise in viewpoint location along Kaiser Road. Viewing to the northeast, this view encompasses the open expanse of a central portion of the Chuckwalla Valley backdropped by the Coxcomb Mountains and the more distant Palen Mountains (out of the frame of view to the right in Figure 4.19-3C). This area includes a foreground/middleground flat desert landscape that supports a sparse and irregular, to more uniform at distance, distribution of short grasses and shrubs of subdued color consisting of tans, browns, and muted greens. The rugged and visually interesting landforms of the nearby Coxcomb Mountains provide a backdrop of visual interest. The applicable Scenic Quality Classification is B. Viewer Sensitivity is high because these lands are within the CDCA and are within the foreground/middleground viewsheds of Kaiser Road, SR-177 (Rice Road), the community of Lake Tamarisk, the Desert Lily Sanctuary ACEC, and Joshua Tree Wilderness in both the Eagle and Coxcomb mountains. The applicable interim VRM Class Rating is IV.

KOP 4 – Desert Lily Sanctuary ACEC – Alternatives 4, 5, 6, and E

KOP 4 was established near the western boundary of the Desert Lily Sanctuary ACEC, just east of SR-177, and is representative of views to the west from the ACEC toward the solar facility alternatives (see Figure 4.19-4A). The Desert Lily Sanctuary ACEC was selected for protection in 1968 because of its history of spectacular bloom displays, and for the protection of the desert lily. It was officially designated by Congress in 1994 as part of the California Desert Protection Act. It is a popular destination for the viewing of the desert lily bloom displays. Although there is very limited visibility of the low-profile solar facility alternatives from this location, the KOP is still valuable in that it is able to demonstrate the minimal visual impact (discussed below) that would be experienced by visitors to this important destination. This particular location is also valuable in that it can capture the visual impact of the closest gen-tie alternative to the ACEC (Alternative E). Viewing to the west, this view encompasses a central portion of the northern Chuckwalla Valley backdropped by the Eagle Mountains to the west. This area includes a foreground/middleground flat desert landscape that supports a sparse and irregular, to more uniform at distance, distribution of short grasses and shrubs of subdued color consisting of tans, browns, and greens. Also visible is a wood-pole utility line. The rugged and visually interesting landforms of the Eagle Mountains provide a backdrop of visual interest. The applicable Scenic Quality Classification is B. Viewer Sensitivity is high because these lands are within the CDCA and are within the foreground/middleground viewsheds of Kaiser Road, SR-177 (Rice Road), the community of Lake Tamarisk, the Desert Lily Sanctuary ACEC, and Joshua Tree Wilderness in both the Eagle and Coxcomb mountains. The applicable interim VRM Class Rating is IV.

KOP 5 – Northbound Kaiser Road near Lake Tamarisk – Alternatives B and C

KOP 5 was established on northbound Kaiser Road, near the community of Lake Tamarisk, and is representative of views toward the Alternative B and C alignments from Kaiser Road and from the Lake Tamarisk community and golf course (see Figure 4.19-5A). As discussed above for KOP 3, there are numerous opportunities to view the transmission line along Kaiser Road. However, this particular location is effective in capturing the visual impact that would be experienced by multiple viewing populations including travelers on Kaiser Road, residents of the Lake Tamarisk community, and visitors to the Lake Tamarisk golf course. Viewing to the north-northwest, this view toward the open expanse of Chuckwalla Valley west of Kaiser Road and the Eagle Mountains beyond is partially obscured by roadside vegetation. This area includes a foreground/middleground flat desert landscape that supports a sparse and irregular, to more uniform at distance, distribution of short grasses and shrubs of subdued color consisting of yellows, tans, browns, and greens. The rugged and visually interesting landforms of the Eagle Mountains provide a backdrop of visual interest. The applicable Scenic Quality Classification is B. Viewer Sensitivity is high because these lands are within the CDCA and are within the foreground/middleground viewsheds of I-10, Kaiser Road, SR-177 (Rice Road), the community of Lake Tamarisk, the Alligator Rock ACEC, and Joshua Tree Wilderness in the Eagle Mountains. The applicable interim VRM Class Rating is IV.

KOP 6 – Eastbound I-10 – Alternative D

KOP 6 was established on eastbound I-10, east of Desert Center, and approximately 0.8 mile west of the Alternative D route span of I-10. This view is representative of views toward the Alternative D alignment from I-10 (see Figure 4.19-6A). This particular location is effective in

capturing the visual impact of a transmission line convergence and span of I-10, the major travel corridor in the region. This KOP assessment is also applicable to the other transmission line alternatives, which would all approach and span I-10 in this same general area. The view to the northeast, toward the span location, captures a central portion of the northern Chuckwalla Valley, north of I-10. This open expanse of valley floor includes a foreground/middleground flat desert landscape that supports a sparse and irregular, to more uniform at distance, distribution of short grasses and shrubs of subdued color consisting of muted yellows, tans, browns, and greens. The rugged and visually interesting landforms of the Palen Mountains provide a backdrop of visual interest. The applicable Scenic Quality Classification is B. Viewer Sensitivity is high because these lands are within the CDCA and are within the foreground/middleground viewsheds of I-10, Kaiser Road, SR-177 (Rice Road), the Desert Lily Sanctuary ACEC, and the Chuckwalla Mountains Wilderness. The applicable interim VRM Class Rating is IV.

KOP 7 – Northbound SR-177 – Alternative E

KOP 7 was established on northbound SR-177 (Rice Road), approximately 0.3 mile southwest of the Alternative E route span of SR-177, and is representative of views toward the Alternative E alignment from SR-177 (see Figure 4.19-7A). This KOP location was selected as a reasonable compromise of the viewing distances to the Alternative E transmission line available to travelers on SR-177. It is also a viewing distance that is fairly representational of the view of the transmission line from the Desert Lily Sanctuary ACEC, immediately north of the alignment. Viewing to the northwest toward the span location, captures a central portion of the northern Chuckwalla Valley where it is bisected by Kaiser Road. The open expanse of the valley floor is partially obscured by roadside vegetation. This area includes a foreground/middleground flat desert landscape that supports a sparse and irregular, to more uniform at distance, distribution of short grasses and shrubs of subdued color consisting of yellows, tans, browns, and greens. The rugged and visually interesting landforms of the Coxcomb Mountains and more distant Palen Mountains provide a backdrop of visual interest. The applicable Scenic Quality Classification is B. Viewer Sensitivity is high because these lands are within the CDCA and are within the foreground/middleground viewsheds of I-10, Kaiser Road, SR-177 (Rice Road), the community of Lake Tamarisk, the Desert Lily Sanctuary ACEC, and Joshua Tree Wilderness in the Coxcomb Mountains. The applicable interim VRM Class Rating is IV.

KOP 8 – Westbound I-10 – Alternative E

KOP 8 was established on westbound I-10 immediately north of the approved Red Bluff Substation site, approximately 5.75 miles east of Desert Center, and approximately 0.2 mile east of the Alternative E route span of I-10. This view is representative of views toward the Alternative E alignment from I-10 (see Figure 4.19-8A). This KOP location was selected because it is effective in capturing the circuitous route of Alternative E across Chuckwalla Valley north of I-10. This route configuration results in the visibility of numerous transmission structures in a single field of view from I-10, thus, the importance of the KOP 8 location. This view to the north captures a central portion of the northern Chuckwalla Valley. The open expanse of the valley floor includes a foreground/middleground flat desert landscape that is generally natural appearing and supports a sparse and irregular, to more uniform at distance, distribution of short grasses and shrubs of subdued color consisting of yellows, tans, browns, and greens. The rugged and visually interesting landforms of the Coxcomb Mountains and more distant Palen Mountains provide a backdrop of visual interest. The applicable Scenic Quality Classification is B. Viewer

Sensitivity is high because these lands are within the CDCA and are within the foreground/ middleground viewsheds of I-10, SR-177 (Rice Road), the Desert Lily Sanctuary ACEC, the Alligator Rock ACEC, and the Chuckwalla Mountains Wilderness. The applicable interim VRM Class Rating is IV.

KOP 8A – Westbound I-10 – Alternatives 7, B, and C

KOP 8A was established immediately adjacent to KOP 8 on westbound I-10 immediately north of the approved Red Bluff Substation site, approximately 5.75 miles east of Desert Center, and approximately 0.2 mile east of the Alternative E route span of I-10. However, the view orientation is to the northwest instead of the north (as for KOP 8) in order to better capture the setting for the high-profile solar facility of Alternative 7 and Alternatives B and C gen-tie routes, as viewed from westbound I-10. It is acknowledged that there are numerous possible viewpoints with varying viewing distances to the solar facility site along I-10 – all providing distant viewing perspectives and variable visibility depending on the presence or absence of intervening screening (vegetation, landforms, structures), as discussed above. While different viewpoints will experience greater or lesser visual contrast, KOP 8A was considered a reasonable compromise in viewpoint location along I-10. Additional discussion of the linear viewpoint analysis for I-10 is provided in section 4.19 below.

The view from KOP 8A is representative of views toward the Alternative 7 solar facility and Alternative B and C gen-tie routes from westbound I-10 (see Figure 4.19-8C). This KOP location was selected because it is effective in capturing both the solar facility and gen-tie north of I-10 in the same field of view. This view to the northwest captures a central portion of the northern Chuckwalla Valley. The open expanse of the valley floor includes a foreground/ middleground flat desert landscape that is generally natural appearing and supports a sparse and irregular, to more uniform at distance, distribution of short grasses and shrubs of subdued color consisting of yellows, tans, browns, and greens. The rugged and visually interesting landforms of the Eagle and Coxcomb Mountains provide a backdrop of visual interest. The applicable Scenic Quality Classification is B. Viewer Sensitivity is high because these lands are within the CDCA and are within the foreground/middleground viewsheds of I-10, SR-177 (Rice Road), the Desert Lily Sanctuary ACEC, the Alligator Rock ACEC, and the Chuckwalla Mountains Wilderness. The applicable interim VRM Class Rating is IV.

KOP 9 – Joshua Tree Wilderness at the eastern-most extent of the Eagle Mountains – Alternatives 4, 5, 6, and 7

KOP 9 was established in Joshua Tree Wilderness at the eastern-most extent of the Eagle Mountains, approximately five miles west of the solar development area. The view orientation is to the east, toward the project site. The view from KOP 9 is representative of views toward the solar facility from lower elevation viewpoints in the Eagle Mountains (and Joshua Tree Wilderness) to the west. This KOP location was selected at the request of the National Park Service in order to prepare a time-lapse simulation of any glare or glint associated with the DHSP tracking panels while in motion from east to west. This view to the east captures a central portion of the northern Chuckwalla Valley. The open expanse of the valley floor includes a foreground/middleground flat desert landscape that is generally natural appearing and supports a sparse and irregular, to more uniform at distance, distribution of short grasses and shrubs of subdued color consisting of yellows, tans, browns, and greens. The rugged and visually

interesting landforms of the Coxcomb and Palen Mountains beyond provide a backdrop of visual interest. The applicable Scenic Quality Classification is B. Viewer Sensitivity is high because these lands are within the CDCA and are within the foreground/middleground viewsheds of I-10, SR-177 (Rice Road), the Desert Lily Sanctuary ACEC, the Alligator Rock ACEC, and the Chuckwalla Mountains Wilderness. The applicable interim VRM Class Rating is IV.

3.20 WATER RESOURCES

This section describes the existing hydrology and water quality conditions that could be affected by implementation of the Desert Harvest Solar Project (DHSP or Proposed Action or Project) and alternatives. The project study area for water resources encompasses all surface and ground-water resources that could be affected by construction, operation, and decommissioning of the Proposed Action.

3.20.1 Applicable Plans, Policies, and Regulations

Existing laws and regulations applicable to water resources in the project study area are described below. In some cases, compliance with these existing laws and regulations would serve to reduce or avoid certain impacts that might otherwise occur with the implementation of the project.

Federal

Clean Water Act

The Federal Water Pollution Control Act was passed in 1972, and was amended in 1977 as the Clean Water Act (CWA, 33 U.S.C. 1251-1376). The CWA was reauthorized in 1981, 1987, and 2000, and establishes the basic structure for regulating discharges of pollutants into the waters of the United States and has given the U.S. Environmental Protection Agency (EPA) the authority to implement pollution control programs. The CWA requires states to set standards to protect, maintain, and restore water quality through the regulation of point source and certain non-point source discharges to surface waters. Many pollutants are regulated under the CWA, including various toxic pollutants, total suspended solids, biological oxygen demand and pH (acidity/ alkalinity measure scale). Those discharges are regulated by the National Pollutant Discharge Elimination System (NPDES) permit process, described below under the "Section 402" discussion. The CWA generally applies to surface Waters of the United States, and the U.S. Army Corps of Engineers (USACE) has not formally determined whether any jurisdictional waters occur on the site of the Proposed Action or alternatives. However, based on previous USACE determinations that waters are not jurisdictional on the adjacent Desert Sunlight Solar Farm project, it is not expected that USACE will take jurisdiction for the Proposed Action and alternatives. Nevertheless, CWA requirements are set forth below.

Section 401

Section (§) 401 of the CWA requires the State (via the nine Regional Water Quality Control Boards [RWQCB]) to issue Water Quality Certifications (WQC) for licenses or permits issued for, among other things, the discharge of dredged or fill materials to federally jurisdictional waters, or Waters of the United States, which are located within the State. In order for a §401 WQC to be required, the activity causing the discharge must be authorized by a permit or license issued by a federal agency; federal licenses and permits most frequently subject to §401 include CWA §402 (NPDES) permits issued by EPA, CWA §404 (dredge and fill) permits issued by the USACE, Federal Energy Regulatory Commission (FERC) hydropower licenses, and Rivers and Harbors Act (RHA) §9 and §10 permits issued by the USACE (USEPA 2010).

Section 402

Section 402 of the CWA prohibits the discharge of pollutants (except for dredged or fill material, which is regulated under §404 of the CWA) from point sources to Waters of the United States, unless authorized under an NPDES permit issued by the United States Environmental Protection Agency (USEPA). In California, NPDES permitting authority is delegated by the USEPA to the State Water Resources Control Board (SWRCB) and administered by the nine RWQCBs. The project is within the jurisdiction of the Colorado River Basin RWQCB (Region 7).

Construction activities may comply with and be covered under the NPDES General Construction Storm Water Permit (Water Quality Order 99 08 DWQ) if the following requirements are met:

- Develop and implement a Storm Water Pollution Prevention Plan (SWPPP) which specifies Best Management Practices (BMPs) that will prevent all construction pollutants from contacting stormwater and with the intent of keeping all products of erosion from moving offsite into receiving waters;
- Eliminate or reduce non-stormwater discharges to storm sewer systems and other waters of the nation; and
- Perform inspections of all BMPs.

Projects that disturb one or more acres and would result in discharge(s) to Waters of the U.S. are required to obtain NPDES coverage under the Construction General Permits. Please see Section 3.3, Vegetation, and 3.4, Wildlife, for a discussion of jurisdictional waters in the project area.

Section 404

Section 404 establishes a permit program administered by the USACE, regulating the discharge of dredged or fill material into Waters of the U.S., including wetlands. Implementing regulations by USACE are found at 33 Code of Federal Regulations (CFR) Parts 320-330. Guidelines for implementation are referred to as the §404(b)(1) Guidelines and were developed by the USEPA in conjunction with USACE (40 CFR Parts 230). The Guidelines allow the discharge of dredged or fill material into the aquatic system only if there is no practicable alternative that would have less adverse impacts. A WQC pursuant to §401 of the CWA is required for §404 permit actions. If applicable, construction would also require a request for WQC or waiver thereof from the Colorado River Basin RWQCB.

Section 303(d)

Section 303(d) of the CWA (CWA, 33 USC 1250, et seq., at 1313(d)) requires states to identify "impaired" waterbodies as those which do not meet water quality standards. States are required to compile this information in a list and submit the list to the USEPA for review and approval. This list is known as the Section 303(d) list of impaired waters. As part of this listing process, states are required to prioritize waters and watersheds for future development of Total Maximum Daily Load (TMDL) requirements. The SWRCB and RWQCBs have ongoing efforts to monitor and assess water quality, to prepare the Section 303(d) list, and to develop TMDL requirements. The Salton Sea, 35 miles southwest of the DHSP, is listed by the Colorado River Basin Regional Water Quality Control Board under Section 303(d) as an impaired waterbody. No other impaired waterbodies exist in the project study area.

Rivers and Harbors Act

Section 10 of the Rivers and Harbors Act (33 USC 401 et seq.) is administered by USACE, and requires permits in navigable waters of the U.S. for all structures such as riprap and activities such as dredging. Navigable waters are defined as those subject to the ebb and flow of the tide and susceptible to use in their natural condition or by reasonable improvements as means to transport interstate or foreign commerce. The USACE grants or denies permits based on the effects on navigation. Most activities covered under this act are also covered under §404 of the CWA. The USACE has not formally stated whether it will take jurisdiction over any waters within the footprint of the Proposed Action; however, USACE had not taken jurisdiction over any waters on the adjacent Desert Sunlight Solar Farm project site, as the watershed in the project study area drains into Palen Dry Lake, rather than to the Pacific Ocean.

Safe Drinking Water Act

This act was originally passed by Congress in 1974 to protect public health by regulating the nation's public drinking water supply. The law was amended in 1986 and 1996 and requires many actions to protect drinking water and its sources, which are rivers, lakes, reservoirs, springs, and groundwater wells. This act authorizes the USEPA to set national health-based standards for drinking water to protect against both naturally occurring and man-made contaminants that may be found in drinking water. The act also mandates a groundwater/wellhead protection program be developed by each state in order to protect groundwater resources that are a source for public drinking water. In California, the California Department of Public Health (CDPH) administers the Drinking Water Source Assessment and Protection (DWSAP) Program, which addresses both surface water and groundwater resources; the groundwater portion of the DWSAP Program serves as the State's wellhead protection program (CDPH 2007). If a groundwater well is developed for the proposed DHSP, it would comply with the DWSAP Program for wellhead protection.

National Flood Insurance Program

The National Flood Insurance Program (NFIP) is administered by the Federal Emergency Management Agency (FEMA), a component of the U.S. Department of Homeland Security. The NFIP is a federal program enabling property owners in participating communities to purchase insurance protection against losses from flooding. In support of the NFIP, FEMA identifies flood hazard areas throughout the U.S. and its territories by producing Flood Insurance Rate Maps (FIRM). FIRMs identify the estimated limits of the 100-year floodplain for mapped watercourses, among other flood hazards. A 100-year floodplain is defined as any land that would be inundated by a flood having a 1 percent chance of occurring in any given year (also referred to as the base flood). Participation in the NFIP is based on an agreement between communities and the federal government. The agreement states that if a community adopts and enforces a floodplain management ordinance to reduce future flood risks to new construction in Special Flood Hazard Areas, the federal government will make flood insurance available to the community. Flood hazards are discussed in Section 3.20.2, under "Surface Water Resources." The DHSP has been designated by FEMA as Flood Zone D meaning no flood hazard analysis has been conducted (FEMA 2011).

Executive Order 11988, Floodplain Management

This order directs all federal agencies to avoid the long-term and short-term adverse impacts associated with the occupancy and modification of floodplains, and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative. Guidance provided per Executive Order 11988 addresses an eight-step process for agencies to determine how projects would have potential impacts to or within the floodplain; as described in this guidance, if a proposed action is located within the base floodplain (Step 1) where the "base floodplain" is the area which has a one percent or greater chance of flooding in any given year (also referred to as the "100-year Flood Zone" or "Flood Hazard Area"), agencies should conduct early public review (Step 2), identify and evaluate practicable alternatives to locating in the base floodplain (Step 3), identify impacts of the proposed action (Step 4), develop measures to minimize the impacts and restore and preserve the floodplain as appropriate (Step 5), reevaluate alternatives (Step 6), and present the findings and a public explanation (Step 7), with the final step being to implement the action (Step 8) (FEMA 2012). As described above under "National Flood Insurance Program," the DHSP area and surrounding vicinity are not identified by FEMA as being located within a base floodplain. However, the impact analysis provided in Section 4.20 of the Final EIS includes discussion of potential impacts associated with Flood Hazard Areas under correlating subheadings, and appropriate mitigation measures are also presented.

Colorado River Accounting Surface Rule

The Colorado River Accounting Surface Rule (Proposed Rule) was proposed by the U.S. Bureau of Reclamation (USBR) in the Federal Register on July 16, 2008 (43 CFR Part 415), as a means for tracking and allocating water use along the Colorado River, including in the vicinity of the DHSP.

USGS Report 2008-5113, *Update of the Accounting Surface Along the Lower Colorado River*, updated the location and extent of the Accounting Surface in support of the Proposed Rule. That USGS document includes a map which shows the Accounting Surface in Parker, Palo Verde, and Cibola Valleys and adjacent tributary areas in Arizona and California, including the DHSP area, and indicates that the project area is located within the areal extent of the river aquifer, and that the Accounting Surface within this aquifer is predicted to be at an elevation of between 238 and 242 feet above mean sea level (msl). The Accounting Surface is used to identify "water withdrawn from the mainstream by underground pumping" (547 U.S.150 (2006)) which will be replaced by surface water from the Colorado River. Groundwater produced from the mainstream needs to be accounted for as consumptive use of Colorado River water as required under the Consolidated Decree (547 U.S.150 (2006)), when the water table at production sites within the CVGB falls below the Accounting Surface (USGS 2008).

The Accounting Surface is defined as the elevation and slope of the static water table in the river aquifer that would exist if the water in the aquifer were derived only from the Colorado River. The river aquifer is defined as those saturated sediments that are hydraulically connected to the Colorado River and includes groundwater basins and tributary valleys that are adjacent to the river. The static water level, which is the measured elevation of the water table not affected by groundwater withdrawal, is used to determine whether a well is pumping water that would be replaced by Colorado River water. A static water level below the Accounting Surface is presumed to yield water that will be replaced by water from the Colorado River (43CFR 415.2(4)).

Groundwater wells with static water levels above the Accounting Surface are presumed to yield water that will be replaced by precipitation, mountain front recharge, or inflow from tributary valleys (tributary water). (USGS 2008)

State of California

California Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act of 1967, Water Code Section 13000 et seq. regulates surface water and groundwater within California and assigns responsibility for implementing CWA §401 through §402 and §303(d). It established the SWRCB and divided the state into nine regions, each overseen by a RWQCB, and requires the SWRCB and the nine RWQCBs to adopt water quality criteria to protect State waters. Those criteria include the identification of beneficial uses, narrative and numerical water quality standards, and implementation procedures. The SWRCB is the primary state agency responsible for protecting the quality of the state's surface and groundwater supplies, but much of its daily implementation authority is delegated to the nine RWQCBs. Water quality criteria for the project study area are contained in the Water Quality Control Plan (Basin Plan) for the Colorado River Basin (Region 7), which was adopted in 1993. This plan sets water quality standards controlling the discharge of wastes to the State's waters and land.

Senate Bill 610

Senate Bill 610 (SB 610) was passed on January 1, 2002, amending California law to require detailed analysis of water supply availability for certain types of large development projects. The primary purpose of SB 610 is to improve the linkage between water and land use planning by ensuring greater communication between water providers and local planning agencies, and ensuring that land use decisions for certain large development projects are fully informed as to whether sufficient water supplies are available to meet project demands. SB 610 requires the preparation of a Water Supply Assessment (WSA) for a project that is subject to CEQA and meets certain requirements, as described below with regard to the project.

1. Is the proposed project subject to CEQA?

   California Water Code Section 10910(a) states that any city or county that determines that a project, as defined in Section 10912, is subject to CEQA shall comply with [Section 10910]. CEQA applies to projects requiring an issuance of a permit by a public agency, projects undertaken by a public agency, or projects funded by a public agency. The proposed DHSP requires issuance of permits by a public agency and is subject to CEQA.

2. Is the proposed project a "Project" under SB 610?

   California Water Code Section 10912(a) states that any proposed action which meets the definition of "project" under SB 610 is required to prepare a WSA to demonstrate whether sufficient water supplies are available to meet requirements of the proposed project under normal and drought conditions. SB 610 defines a "project" as any one of six different development types with certain water use requirements, as specified in the Water Code revised by SB 610. Each identified development type and associated water requirements are addressed below. Any mixed-use project which incorporates one of the six development types described below is also defined as a "project" under SB 610.

- *Residential Development*

  A proposed residential development of more than 500 dwelling units is defined as a "project" under SB 610. The proposed DHSP is not a residential development.

- *Shopping Center or Business Establishment*

  A proposed shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space is defined as a "project" under SB 610. The proposed DHSP is not a shopping center or residential development.

- *Commercial Office Building*

  A proposed commercial office building employing more than 1,000 persons or having more than 250,000 square feet of floor space is defined as a "project" under SB 610. The proposed DHSP is not a commercial office building.

- *Hotel or Motel*

  A proposed hotel or motel, or both, having more than 500 rooms is defined as a "project" under SB 610. The proposed DHSP is not a hotel or motel.

- *Industrial, Manufacturing, or Processing Plant or Industrial Park*

  A proposed industrial, manufacturing, or processing plant, or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area is defined as a "project" under SB 610.

  The proposed DHSP is not a manufacturing plant, processing plant, or industrial park. The language of SB 610 is not clear on whether renewable energy projects such as the proposed DHSP should be considered an "industrial plant." If the proposed DHSP is considered to be an industrial plant, it should also be considered a "project" under SB 610 because it would occupy more than 40 acres of land. The passing of SB 267 on October 11, 2011 clarified that renewable energy projects are subject to the requirements of SB 610 by amending California Water Law to revise the definition of "project" specified in SB 610. Under SB 267, wind and photovoltaic projects which consume less than 75 acre-feet per year (afy) of water are not considered to be a "project" under SB 610; subsequently, a WSA would not be required for this type of project. Construction of the DHSP would require 400.51 to 500.51 afy of water over the 24-month construction period, while operation of the project would require 26.02 to 39.02 afy. Due to the construction water requirements, the DHSP is considered a "project" per SB 610, as clarified by SB 267. Therefore, a WSA has been prepared to satisfy the requirements of SB 610.

3. Is there a public water system that will service the proposed project?

   United States Code Title 42 Section 300f(4) describes that the term "public water system" refers to a system for the provision to the public of water for human consumption through pipes or other constructed conveyances, if such system has at least fifteen service connections or regularly serves at least twenty five individuals (42 U.S.C. Sec. 300f(4)). The proposed DHSP would not be serviced by a public water system. As described in Section 2,

water required during construction and operation of the DHSP would be obtained from groundwater well(s) located on- and/or off-site, and would pump water from the CVGB.

4. Is there a current UWMP that accounts for the project demand?

   There are a number of Urban Water Management Plans (UWMPs) in Riverside County, including the following: City of Riverside UWMP, Coachella Valley Water District UWMP, Desert Water Agency UWMP, Eastern Municipal Water District UWMP, Riverside Highland Water Company UWMP, and Western Municipal Water District UWMP. These plans do not address the DHSP site; there is no current UWMP that accounts for the project demand.

5. Is groundwater a component of the supplies for the project?

   Yes, water supply requirements for the proposed DHSP are currently expected to be met using water pumped from the CVGB. During the 24-month construction period for the DHSP, 400.51 to 500.51 afy of water would be used for fugitive dust control and concrete batching, for a total construction water demand of 801.02 to 1,001.02 acre-feet. Local groundwater would also be used to meet the project's operational water requirements of 26.02 to 39.02 afy for panel washing and use at the O&M building. As previously described, the project's water supply would be pumped from the CVGB.

As described above, further revisions to California Water Code resulting from Senate Bill 267 (discussed below) clarify that certain renewable energy projects are subject to the requirements of SB 610. A WSA has been prepared for the proposed DHSP in compliance with SB 610, and is provided as Appendix E to this EIS.

Senate Bill 267

Senate Bill 267 (SB 267) was signed into law by California's Governor Brown on October 8, 2011, amending California's Water Law to revise the definition of "Project" specified in SB 610, as discussed above. Under SB 267, wind and photovoltaic projects which consume less than 75 afy of water are not considered to be a "Project" under SB 610; subsequently, a WSA would not be required for this type of project. SB 267 does not state that renewable energy projects which use more than 75 afy are subject to SB 610 and must prepare a WSA; rather, it clarifies that those renewable projects which use less than 75 afy are not subject to such requirements. SB 267 also does not state that the 75-afy threshold cannot be interpreted to mean the average annual water usage over the lifetime of a project; however, for the purposes of the analysis presented in this EIS, the most literal interpretation of SB 267 is utilized and it is therefore assumed that the 75-afy threshold refers to the quantity of water consumed during any 12-month period of a project. As noted above, the DHSP would require 400 to 500 afy of water over the 24-month construction period (total construction water requirement of 800 to 1,000 acre-feet). Therefore, the DHSP is considered subject to the requirements of SB 610 per SB 267, and a WSA has been prepared for the project and is included as Appendix E to this EIS.

California Water Code Section 1200, Water Rights

The law in California requires that water be identified as one of three categories: surface water, percolating groundwater, or "subterranean streams that flow through known and definite channels." Only surface water and subterranean stream water are within the permitting jurisdiction of

the SWRCB. Appropriation of those waters requires a SWRCB permit, and is subject to various permit conditions.

Water subject to appropriation is defined in Water Code Section 1201 as "all water flowing in any natural channel," except water that is or may be needed for use upon riparian land or water that is otherwise appropriated. The SWRCB's authority over groundwater extends only to the water in un-appropriated subterranean streams that flow through known or defined channels, except as it is or may reasonably be needed for useful and beneficial purposes upon lands riparian to the channel through which it is flowing.

"Percolating groundwater" has two sub-classifications: overlying land use, and surplus groundwater. Land owners overlying percolating groundwater may use the water on an equal basis and share a right to reasonable use of the groundwater aquifer. In this right, a land owner cannot consume unlimited quantities of underlying groundwater without regard to the needs of other users. Surplus groundwater may be appropriated for use on non-overlying lands, provided such use will not create an overdraft condition.

California Fish and Game Code, Sections 1601 – 1603

Under Sections 1601 to 1603 of the California Fish and Game Code, the Applicant is required to notify the CDFG prior to constructing any project that would divert, obstruct or change the natural flow, bed, channel, or bank of any river, stream, or lake. Preliminary notification and project review generally occur during the environmental process. When an existing fish or wildlife resource may be substantially adversely affected, CDFG is required to propose reasonable project changes to protect the resource. These modifications are formalized in a Streambed Alteration Agreement that becomes part of the plans, specifications, and bid documents for the project.

State Water Resources Control Board Resolution 88-63

On May 19, 1988, the SWRCB adopted a policy entitled "Sources of Drinking Water," which was later revised by Resolution No. 2006-0008. The purpose of this resolution is to provide sufficient detail for incorporation into the applicable Basin Plan to facilitate the clear judgment of what is or is not a source of drinking water for various purposes. All surface and ground waters of the State are considered to be suitable, or potentially suitable, for municipal or domestic water supply and should be so designated by the RWQCBs with the exception of surface and ground waters where one of the following conditions exists:

- The Total Dissolved Solids (TDS) exceed 3,000 milligram per liter (mg/L) (5,000 micro-Siemens per centimeter (µS/cm), electrical conductivity) and it is not reasonably expected by RWQCB to supply a public water system;
- There is contamination, either by natural processes or by human activity (unrelated to the specific pollution incident), that cannot reasonably be treated for domestic use using either Best Management Practices or best economically achievable treatment practices; and/or
- The water source does not provide sufficient water to supply a single well capable of producing an average, sustained yield of 200 gallons per day.

Groundwater Protection Areas and Wellhead Protection

The overall concept behind wellhead protection is to develop a reasonable distance between point sources of pollution and public drinking water wells so that releases from point sources are unlikely to impact groundwater from the well. The California Department of Public Health (CDPH) established the Drinking Water Source Assessment and Protection Program, which guides local agencies in protecting surface water and groundwater that are sources of drinking water. The California Department of Pesticide Regulation's Groundwater Protection Program is charged with identifying areas sensitive to pesticide contamination and develops mitigation measures and regulations to prevent pesticide movement into groundwater systems.

Regional and Local Regulations

County of Riverside

- The Desert Center Area Plan within the County of Riverside General Plan aims to preserve the natural character of the unincorporated areas of Riverside County and Desert Center. As relevant to water resources and the preservation of natural drainage patterns, the plan encourages clustering of development for the preservation of contiguous open space, and aims to limit off-road vehicle use.
- The Riverside County Flood Control and Water Conservation District is the regional flood management authority for the western part of Riverside County. The responsibility for the eastern part of the County is borne by a combination of the County Transportation Department, the Coachella Valley Water District, and the various cities and a variety of local entities.

Riverside County Floodplain Management Ordinance 458

Riverside County is a participating community in the NFIP (discussed above) and is therefore required by FEMA to adopt a floodplain management ordinance in order to make the purchase of flood insurance available to citizens of the county. The intent of this ordinance is to ensure that any new construction and/or substantial improvement within a mapped floodplain is done in a manner that reduces damage to the public and property, as well as to discourage new development within floodways. The Floodplain Management (FPM) Section of the District is responsible for the implementation of the County's Floodplain Management regulation and portions of the NFEP regulations. (RCFCWCD 2011)

In accordance with Ordinance 458, Section 4 (Administration), no structure shall be constructed, located, or substantially improved and no land shall be graded, filled, or developed, and no permit or approval shall be granted therefore, unless it complies with all applicable requirements of the ordinance. As relevant to the proposed DHSP, per Section 6 (Construction Standards) of Ordinance 458, proposed developments within a mapped floodplain area must meet the following criteria: be designed or modified and adequately anchored to prevent flotation, collapse, or lateral movement of the structure; be constructed with materials resistant to flood damage; be constructed by methods and practices that minimize flood damages; and be constructed with electrical, heating, ventilation, plumbing, and air conditioning equipment and other service facilities that are designed or located so as to prevent water from entering or accumulating within the components during conditions of flooding.

Riverside Code Section 13.20 (Ordinance 682): Construction, Reconstruction, Abandonment and Destruction of Wells

This ordinance provides minimum standards for construction, reconstruction, abandonment, and destruction of all wells. Permits shall be issued after compliance with the standards provided and incorporated by reference in this ordinance. Plans shall be submitted to the Riverside County Department of Environmental Health demonstrating compliance with such standards.

Standards for the construction, reconstruction, abandonment, or destruction of wells shall be the standards recommended in the Bulletins of the California Department of Water Resources (DWR) as follows: Bulletin No. 74-81 Chapter II Water Wells, and Bulletin No. 74-90 (Supplement to Bulletin No. 74-81) and as these Bulletins may be amended by the State of California from time to time.

Water from all new, repaired, and reconstructed community water supply wells, shall be tested for and meet the standards for constituents required in the California Code of Regulations, Title 22, Domestic Water Quality and Monitoring.

3.20.2 Water Resources Existing Conditions

The DHSP is located in eastern Riverside County, adjacent to the southern edge of the Desert Sunlight Solar Farm project and north of the community of Desert Center, in the Chuckwalla Valley. The Chuckwalla Valley basin generally trends northwest to southeast and is surrounded by relatively impervious bedrock mountain exposures. These ranges include the Chuckwalla and Little Chuckwalla Mountains to the south, the Eagle and Coxcomb Mountains to the west-northwest, the Granite, Palen, and Little Maria Mountains to the north, with the McCoy and Mule Mountains to the east. The Coxcomb and Palen Mountains extend into the valley from the north. Elevations range from about 400 feet above msl in the eastern part of the valley to more than 5,000 feet above msl in the mountains.

Climate in the Chuckwalla Valley is characterized by high aridity and low precipitation, with hot summer months characterized by average maximum temperature of 108 degrees Fahrenheit (ºF) in July and cold dry winters characterized by average minimum temperature of 66.7 ºF in December. Average annual precipitation in the area (based on the gauging stations at Blythe Airport and Eagle Mountain) is 3.6 to 3.7 inches, with August recording the highest monthly average of 0.64 inches and June recording the lowest monthly average of 0.02 inches. Most moisture from precipitation is lost through evaporation and evapotranspiration (Colorado River Basin RWQCB 2006b). Most rainfall occurs during the winter months or in association with summer storms, which tend to be of shorter duration and higher intensity than winter storms. (BLM 2011a)

The California Interagency Watershed Mapping Committee (CIWMC) has developed a system for naming and delineating watersheds and subunits in California, beginning with 10 Hydrologic Regions (HR) that each cover millions of acres, and which are progressively subdivided into Hydrologic Units (HU) and Hydrologic Areas (HA). The DHSP is located in the Colorado HR, and is within the Chuckwalla HU, and entirely within the Palen HA subdivision of the Chuckwalla HU. The Chuckwalla HU encompasses 1,268,650 acres, and the Palen HA accounts for 419,660 of these acres, or 33 percent of the larger HU.

For planning and reporting purposes, the Basin Plan also divides the Colorado River Basin region into seven major planning areas (Colorado River Basin 2006b). The DHSP site is located within the Hayfield Planning Area, which lies primarily in Riverside County and covers 1,860 square miles, or 1,190,400 acres (Colorado River Basin 2006b). The Hayfield Planning Area is discussed throughout this section as relevant to environmental baseline conditions.

Environmental baseline conditions for water resources also considers the Desert Sunlight Solar Farm project, which is located adjacent to the northern edge of DHSP, because construction of the solar field associated with the Desert Sunlight Solar Farm project was under way at the time of the commencement of analysis for this EIS in September 2011. The Desert Sunlight Solar Farm project is discussed as applicable throughout this section and in the impact analysis presented in Section 4.20 of this EIS.

Surface Water Resources

For the purposes of this analysis, the study area for surface water resources is defined as the Chuckwalla HU. Figure 3.20-1 (Surface Water Resources Study Area: Chuckwalla Hydrologic Unit) shows the entire area encompassed by the Chuckwalla HU and identifies adjacent HUs, including the following (clockwise from the north): Cadiz HU, Ward HU, Rice HU, Colorado HU, Imperial HU, East Salton HU, Hayfield HU, Whitewater HU, Joshua Tree HU, Dale HU, and Route Sixty Six HU. Water resources located outside of the Chuckwalla HU are mentioned and/or discussed as relevant to context and the surrounding environment for the proposed DHSP; for instance, the Colorado River is shown on Figure 3.20-1 to the east of the proposed DHSP site. The Chuckwalla HU is considered an appropriate extent of analysis because this area encompasses surface water resources that could reasonably be affected by the DHSP. Potential impacts to the Colorado River and other surface water resources are discussed in Section 4.20.

Surface water resources in the DHSP area are primarily characterized as ephemeral desert washes with no water during most of the year. Figure 3.20-2 (Surface Water Features on the Project Site) shows site-specific water resources, characterized by streams and washes which traverse the proposed DHSP site, primarily in a northwest-to-southeast direction. These desert washes are typically sandy or rocky bed streams lined on the sides with desert riparian vegetation. The washes can be very numerous, braiding across the alluvial plains downstream of source areas. Adjacent washes on these alluvial “fans” may all have the same mountain source, with flow from the mountains potentially entering many channels that run adjacent to each other. Flow in these alluvial plain washes is typically heavily laden with sediment, and erosion of the wash banks and shifting of channel beds is common. The desert valleys are generally wide and flat, with watercourses, particularly in areas with large drainage areas, being hundreds of feet wide. Flows on these washes are very shallow, although there are generally one or more incised channels. Channel bed material and sides in the valley bottoms can be very fine silts and clays, with potential for erosion during very large flows in the incised channels.

There are no surface water flow outlets from the Chuckwalla Valley, which is internally drained; desert washes in the valley either terminate in localized groundwater sinks or flow to one of the two playas located within the basin — Palen Dry Lake and Ford Dry Lake, which are discussed below. Figure 3.20-2 shows numerous drainages in the project area, including twelve which traverse the DHSP site. There are no perennial (year-round) streams in Chuckwalla Valley (DWR

2004a) or in the Hayfield Planning Area (Colorado River Basin RWQCB 2006b). Perennial water resources, or those that exist year-round, in the surrounding area are limited to the Colorado River, 48 miles to the east of the DHSP, and the Salton Sea, 35 miles southwest of the project, as shown on Figure 3.20-1. There is no surface water connection between resources within the Chuckwalla HU and the Colorado River or the Salton Sea; however, as described below under "Groundwater Resources," groundwater underlying the proposed DHSP site is understood to be hydrologically connected to the Colorado River through groundwater flow.

As mentioned, there are two playas within the Chuckwalla Valley HU, Palen Dry Lake and Ford Dry Lake. Playas are shallow, centrally located basins or depressions where water gathers after a rain but evaporates or percolates into the subsurface quickly. Palen Dry Lake is located 8 miles east of the DHSP site, within the Palen HA. Palen Dry Lake is a wet playa, with shallow groundwater discharge due to evaporation. Palen Dry Lake is 3 miles wide and 2 miles long. Ford Dry Lake is located 19 miles southeast of the project site, within the Ford HA. Ford Lake is a "dry playa," with groundwater occurring well below the ground surface. Ford Dry Lake is 2 miles wide and 7 miles long.

As described in Section 3.20.1 under "National Flood Insurance Program," 100-year floodplains are geographic areas that would be inundated by a flood having a 1 percent chance of occurring in any given year, as reflected on FEMA-prepared FIRMs. The DHSP area is reflected on FIRM 06065C1800G, which is designated by FEMA as Flood Zone D, or areas with "possible but undetermined flood hazards," where no flood hazard analysis has been conducted (FEMA 2011). A Zone D designation does not mean that flood hazards do not exist in the area, but rather that the area has not been mapped for flood hazards. FIRM 06065CIND2A (Sheet 2 of 2), which is the index map for Riverside County, indicates that the FIRMs surrounding the project area are also designated as Zone D.

The DHSP site is located within an "Awareness Floodplain" mapped by the DWR as part of the Awareness Floodplain Mapping (AFM) project (DWR 2011b). The purpose of the AFM project is to identify pertinent flood hazard areas that are not mapped under FEMA's NFIP, such as the proposed DHSP site. These areas are indicated on Awareness Maps which show flood-prone areas, without specific depth of flood flows or other flood hazard data such as indicated on FEMA's FIRMs. Awareness Floodplain areas are also addressed in the Riverside County's Floodplain Management Ordinance 458 (described in Section 3.20.1 under "Regional and Local Regulations"), which is intended to protect public health and safety by regulating development in floodplains.

A *Preliminary Flood Plain & Hydrology Analysis* prepared for the Eagle Mountain Area, including the DHSP site, was conducted to characterize the depth and velocity of surface flows that would occur in response to a 100-year magnitude storm that occurs over a duration of 24 hours. This analysis utilized a synthetic unit hydrograph to model natural drainage courses, including consideration of the geometric data for a series of cross sections within each drainage reach. The 100-year peak flow was routed through the modeled system to determine water surface elevations. This analysis determined that surface water flows resulting from a 100-year storm event in the project area can exceed 1,800 cubic feet per second. The analysis also determined that due to the numerous small drainage channels in the area, 100-year storm flows would be distributed, with flow depths up to about 3 to 5 feet. (PHB & Associates 2009)

As stated above, the first phase of construction conditions of the Desert Sunlight Solar Farm project are considered part of the environmental baseline conditions for water resources. Implementation of the Desert Sunlight Solar Farm project has included construction of an earthen berm and fence along a portion of the southern boundary of that project site, which is also the northern boundary of the DHSP site. The berm surrounds a water storage and evaporation pond on the Desert Sunlight site, both of which will be removed following construction of the Desert Sunlight project; the berm is not anticipated to interfere with surface water flows onto the DHSP site.

Jurisdictional Delineations

Jurisdictional delineations are discussed in detail in Sections 3.3 (Biological Resources – Vegetation) and 3.4 (Biological Resources – Wildlife). Biological resources surveys were conducted within the DHSP area between January and October of 2011. A Biological Resources Technical Report (BRTR) (Appendix C) incorporates the results of all field surveys and literature reviews conducted for the DHSP to characterize the biological resources, including jurisdictional drainages that could be directly or indirectly impacted by implementation of the DHSP.

The CDFG regulates alterations to state-jurisdictional streambeds under Section 1600 et seq. of the California Fish and Game Code. Jurisdictional acreage is interpreted as the bed and banks of channels and adjacent riparian vegetation. In the Chuckwalla Valley area, the Blue Palo Verde–Ironwood Woodland (described in Section 3.3) is the regional riparian vegetation type. Due to the abundance and close spacing of braided channels throughout the area, all mapped Blue Palo Verde–Ironwood Woodland is adjacent to one or more channels. Aspen has calculated the total acreage of state-jurisdictional streambeds and adjacent riparian habitat as 180 acres within the proposed solar facility site. Figure 3.3-3 (CDFG Jurisdictional Streambeds) portrays state-jurisdictional drainages of varying widths.

Surface Water Quality

As discussed in Section 3.20.1, under the discussion of the CWA Section 303(d), states are required to identify "impaired" waterbodies as those which do not meet water quality standards, as defined in the Basin Plan for each RWQCB. No surface waters in the DHSP area are listed as impaired on the 2006 CWA Section 303(d) List of Water Quality Limited Segments for the Colorado River Basin Region (Colorado River Basin RWQCB 2006a).

Also as described in Section 3.20.1, the DHSP is located within the jurisdiction of the Colorado River Basin RWQCB and is subject to management direction of the Basin Plan for the Colorado River Basin Region. The Basin Plan defines water quality criteria for the project area and sets water quality standards controlling the discharge of wastes to the State's waters and land. Beneficial uses for surface waters are identified for eastern and western portions of the Colorado River Basin, as opposed to the individual Planning Areas. Those surface waters relevant to the project area are listed below in Table 3.20-1, with associated beneficial uses.

Table 3.20-1. Beneficial Uses of Surface Waters in the Project Area and Vicinity

	Beneficial Use Designation[1, 2]												
Surface Water Feature	MUN	AGR	AQUA	FRSH	IND	GWR	REC I	REC II	WARM	COLD	WILD	POW	RARE
Unlisted Perennial and Intermittent Streams	P[3]			I,X[4]		I,X	I,P,X	I,X	I,X		I,X		I,X[5]
Washes[6] (Ephemeral Streams)				I[4]		I		I	[7]		I		
Unlisted Springs						X	X,P	X,P	X[8]		X		X[5]
Salton Sea			X		P		X	X	X		X		X

1 - MUN: Municipal and Domestic Supply; AGR: Agriculture Supply; AQUA: Aquaculture; FRSH: Freshwater Replenishment; IND: Industrial Service Supply; GWR: Groundwater Recharge; REC I: Water Contact Recreation; REC II: Non-Contact Water Recreation; WARM: Warm Freshwater Habitat; COLD: Cold Freshwater Habitat; WILD: Wildlife Habitat; POW: Hydropower Generation; RARE: Preservation of Rare, Threatened, or Endangered Species.

2 - Listing of the beneficial uses is indicated by X for existing uses, P for potential uses, and I for intermittent uses.

3 - Potential use designations will be determined on a case-by-case basis as necessary in accordance with the "Sources of Drinking Water Policy" in the Basin Plan.

4 - Applies only to tributaries to Salton Sea.

5 - Rare, endangered, or threatened wildlife exists in or utilizes some of these waterway(s). If the RARE beneficial use may be affected by a water quality control decision, responsibility for substantiation of the existence of rare, endangered, or threatened species on a case-by-case basis is upon the California Department of Fish and Game on its own initiative and/or at the request of the Regional Board; and such substantiation must be provided within a reasonable time frame as approved by the Regional Board.

6 - Including the section of ephemeral flow in the Whitewater River Storm Water Channel and Coachella Valley Storm Water Channel from Indian Avenue to approximately 1/4 mile west of Monroe Street crossing.

7 - Use, if any, to be determined on a case-by-case basis.

8 - Section of perennial flow from Indio to the Salton Sea.

Source: Colorado River Basin RWQCB 2006b.

Construction, operation and maintenance, and decommissioning of the DHSP are expected to be consistent with all beneficial uses and water quality criteria defined in the Basin Plan. Potential impacts associated with water quality are discussed in Section 4.20 of this EIS.

Groundwater Resources

This section includes definitions and discussion of technical terms where necessary to facilitate the understanding of groundwater resources in the DHSP area.

The project site overlies the Chuckwalla Valley Groundwater Basin (CVGB), which is identified as the study area for groundwater resources for the purposes of this analysis. This is an appropriate study area because it encompasses the groundwater resources that could reasonably be affected by the DHSP. Figure 3.20-4 (Extent of Groundwater Basin at Project Site) shows that the proposed DHSP site is completely within the CVGB, as well as the gen-tie line alternatives and the Red Bluff Substation. The CVGB has a surface area of approximately 940 square miles, or about 604,000 acres (DWR 2004a). This basin is bounded by crystalline bedrock with relatively little porosity or permeability except in fractures (DWR 2004a). The presence of seismic faults is considered likely in some parts of the CVGB, but no barriers to groundwater flow have been identified (DWR 2004a).

The entire area encompassed by the CVGB is shown on Figure 3.20-3 (Groundwater Resources Study Area: Chuckwalla Valley Groundwater Basin), as well as surrounding basins, which include the following (clockwise, from the north): Ward Valley Groundwater Basin, Rice Valley Groundwater Basin, Palo Verde Mesa Groundwater Basin, Arroyo Seco Valley Groundwater Basin, Chocolate Valley Groundwater Basin, Orocopia Valley Groundwater Basin, Pinto Valley

Groundwater Basin, and Cadiz Valley Groundwater Basin. It is important to note that although these groundwater basins appear to be located adjacent to the CVGB, they are largely separated by hydrologic divides which inhibit the movement of groundwater between basins; the hydrologic connectivity of the CVGB with other basins in the area is discussed below, under "Recharge and Connectivity."

The DWR identifies the CVGB as Basin 7-5, as detailed in California's Groundwater Bulletin 118 (California DWR 2003). Bulletin 118 is a comprehensive report on the condition of groundwater throughout California, and provides guidance and direction for agencies responsible for managing groundwater resources. Per the latest update of Bulletin 118 for this region, not enough information is available to provide a quantitative assessment of the CVGB water budget (discussed in detail below, under "Safe Yield and Water Budget").

Groundwater resources in the Chuckwalla Valley are not adjudicated, which means that overlying land owners may use the groundwater on an "equal and correlative" basis, such that all property owners above a common aquifer possess a shared right to reasonable use of the aquifer, and a user cannot take unlimited quantities without regard to the needs of other users (BLM 2001). Surplus groundwater may be appropriated for use on non-overlying lands, provided such use will not create overdraft conditions; permits are not required for the use of underlying groundwater, but the appropriation of surplus groundwater is subordinate to the correlative rights of overlying users (BLM 2001).

As noted above, there have been no court actions involving water rights or water use in the CVGB. In accordance with a 2003 decision by the SWRCB identified as Water Rights Order (WRO) 2003-0004, which provided interpretation of California Water Code §1200, State jurisdictional waters include those which meet the following criteria: (1) A subsurface channel is present; (2) The channel has relatively impermeable bed and banks; (3) The course of the channel is known or may be determined by reasonable inference; and (4) Groundwater is flowing within the channel (SWRCB 2003). Waters that are identified as State jurisdictional waters are appropriated for use by state-issued permits. If it is determined that groundwater in the CVGB is State jurisdictional, such as if it is considered a subsurface channel as described in WRO 2003-0004, the CVGB would be managed by the SWRCB and use of groundwater from the CVGB would be determined through appropriation. Until determination of State jurisdiction is made, the CVGB will be governed by the equal and correlative doctrine described above.

The CVGB is expected to be used to meet the solar facility's construction water demand of 400.51 to 500.51 afy over a 24-month construction period, for a total construction water requirement of 801.02 to 1,001.02 acre-feet. Groundwater from the CVGB is also expected to be used to meet the solar facility's operational water requirement of 26.02 to 39.02 afy. The Applicant's Plan of Development (POD) indicates that pending the permitting and physical feasibility of using on-site groundwater wells, construction water will either be obtained from on-site wells and/or it would be pumped from off-site wells in the DHSP area and trucked to the project site. Potential impacts to groundwater supply and recharge are discussed in Section 4.20.

Water-bearing Features

Water-bearing formations in this groundwater basin include Pliocene to Quaternary age continental deposits divided into Quaternary alluvium, the Pinto Formation, and the Bouse Formation. These sediments are typical of basin fill deposits in the region, often containing

layers of fine materials (clays and silts) central to the basin and away from the mountain fronts. Conversely, sediments tend to coarsen (sands and gravels with cobbles) around the basin edges. The maximum thickness of these deposits is about 1,200 feet, thinning toward the edges and to the western end of the basin. These deposits are generally considered unconfined, but some portions of the aquifer may be semi-confined in central areas of the basin due to the abundance of clay materials. All of the sediments filling this basin are considered part of the same aquifer.

The average specific yield of the upper 500 feet of unconsolidated sediments is estimated (in 1979) to be 10 percent (DWR 2004a). "Specific yield" is the ratio of the volume of water that saturated rock or soil will yield by gravity drainage to the total volume of the rock or soil (DWR 2011a). Specific yield is an important factor in water availability and is the factor that is used to convert saturated thickness (water table elevation) to the actual volume of water available. Although the porosity of a formation will remain relatively constant, factors which vary with changes in saturated thickness include specific yield, average local porosity, and the volume of water in storage (Buddemeier and Schloss 2000).

Recharge and Connectivity

The CVGB is recharged by percolation of runoff from the surrounding mountains, percolation of precipitation to the valley floor, groundwater inflow from the Pinto Valley, and groundwater inflow from the eastern portion of the Orocopia Valley (DWR 2004a; BLM 2011a). The California DWR's Bulletin 118 states that the CVGB also receives subsurface flows from the Cadiz Valley Groundwater Basin. However, hydrogeology experts disagree with this connection; due to a general lack of data to characterize this connection, the current consensus is that there is no hydrologic connection between the CVGB and the Cadiz Valley Groundwater Basin.

As described under "Surface Water Resources," surface runoff from the surrounding mountains is largely ephemeral, with most surface water features containing flow only in direct response to precipitation events. As described in the introduction to this section, average annual precipitation in the DHSP area is 3.6 to 3.7 inches (BLM 2011a). Geologically or hydrologically connected groundwater basins are summarized below. The connection of each of these groundwater basins to the CVGB is described below and considered throughout the impact analysis presented in Section 4.20 of the EIS for the proposed project.

- **Pinto Valley Groundwater Basin.** Recharge to the Pinto Valley Groundwater Basin occurs through percolation of runoff from the surrounding mountains and precipitation to the valley floor and by underflow (DWR 2004b). The water that infiltrates the ground and reaches the water table percolates through the pore spaces in the water-bearing formations from points of replenishment toward points of discharge (USGS 2007). Under natural conditions, the only discharge from the Pinto Valley Groundwater Basin is underflow to the CVGB through unconsolidated deposits between exposures of consolidated rock of the Eagle and Coxcomb Mountains (USGS 2007). The water table in the Pinto Valley Groundwater Basin is deep enough that groundwater discharge from the transpiration of plants does not occur (USGS 2007). This basin is identified as Basin 7-6 by the California DWR.
- **Orocopia Valley Groundwater Basin.** This basin underlies the Orocopia Valley in central Riverside County, northeast of the Salton Sea. The western portion of the valley drains south and westward toward the Salton Sea, while the eastern portion of the basin drains eastward toward Hayfield Dry Lake and the CVGB. East-trending faults are located along the northern

and southern boundaries of the Orocopia Valley Groundwater Basin; the North Chiriaco fault is inferred to extend eastward into Chuckwalla Valley and is known to be a partial barrier to groundwater movement in the Orocopia Valley Groundwater Basin. Natural recharge in this basin occurs from subsurface inflow and infiltration of runoff from the surrounding mountains and rainfall to the valley floor (DWR 2004d). This basin is identified as Basin 7-31 by the California DWR.

The Metropolitan Water District of Southern California (MWD) has initiated a demonstration aquifer storage project in the Hayfield Dry Lake area, which is underlain by the Orocopia Valley Groundwater Basin. Nearly 60,000 acre-feet of Colorado River water have been placed in storage at this location. Work has been ongoing to develop production wells for water retrieval and to monitor aquifer conditions. This project is not fully active at this time. MWD has also studied a companion aquifer storage project in the northern and northeastern portions of the CVGB that are adjacent to the Colorado River Aqueduct. This project has not yet been implemented.

- **Cadiz Valley Groundwater Basin.** Sediments of the Cadiz Valley and the CVGB are in contact at the northern edge of the CVGB between the Coxcomb and the Granite Mountains. Although the DWR has reported that Cadiz Valley Groundwater Basin contributes subsurface flow to CVGB, more recent work has reportedly confirmed that the Cadiz Valley Groundwater Basin does not contribute inflow to the CVGB (CEC 2009). Based on expert opinion and the most recent available data, for the purposes of this analysis it is assumed that the Cadiz Valley Groundwater Basin is not hydrologically connected to the CVGB.
- **Palo Verde Mesa Groundwater Basin.** The Palo Verde Mesa Groundwater Basin is in eastern Riverside County to the east of the McCoy and Mule Mountains. This basin is made up of alluvial deposits and Colorado River terraces. Natural recharge to this basin occurs from percolation of runoff from the surrounding mountains, percolation of precipitation to the valley floor, groundwater inflow from the CVGB, and groundwater inflow from the Colorado River through its floodplain sediments (Palo Verde Valley Groundwater Basin). Groundwater movement is south and southeasterly into the Palo Verde Valley Groundwater Basin and the Colorado River. (DWR 2004e)

Groundwater Level Trends

Groundwater levels in the Hayfield Planning Area range from the ground surface to 400 feet below ground surface (bgs) (Colorado River Basin RWQCB 2006b). Specific to the CVGB, data show stable groundwater levels in the basin in 1963, and groundwater contours in 1979 indicate that groundwater moves from the north and west toward the gap between the Mule and McCoy Mountains at the southeastern end of the valley (DWR 2004a). The direction of groundwater movement is not anticipated to have changed since the aforementioned 1979 data; however, groundwater level trends may have changed substantially since 1963, due to development of the area and expanded groundwater uses. For example, data from wells within the Desert Center area show a period of water level decline from the mid-1980s through the early 1990s during periods of expanded agricultural operations when combined pumping exceeded 20,000 afy, well above historic water usage for the western portion of the basin (AECOM 2011). Since the mid-1990s, agricultural use of groundwater has declined and groundwater levels have partially recovered, at least in the western portion of the CVGB (AECOM 2011).

Groundwater level trends in the CVGB have been discussed in recent environmental analyses for other projects that could affect the basin. In comments provided on the Draft EIS for the Eagle Crest Pumped Storage Hydroelectric Project (Eagle Crest), the National Park Service (NPS), Joshua Tree National Park, has expressed concerns regarding the estimated budget for the CVGB, and the methodologies used in characterizing that budget (NPS 2010). The proposed DHSP is in the same groundwater basin as Eagle Crest, and the estimated groundwater budget used for the Eagle Crest analysis is used in part for the purposes of this analysis; therefore, the NPS' concerns regarding the estimated budget for the CVGB are addressed in this analysis.

The NPS notes that in general, groundwater levels in the CVGB appear to have been trending downwards for several decades. Most wells in the CVGB have not been used for monitoring data such as groundwater level trends since the 1980s; however, several wells have been used to collect groundwater data for the past 25 years, and these data show that groundwater level trends have either been fairly stable (for the eastern CVGB), dropping slowly but steadily (central CVGB), or rising slowly back towards pre-pumping groundwater levels (for the western CVGB). As shown on Figure 3.20-3, the proposed DHSP site is located in the western portion of the CVGB, where groundwater monitoring data suggests that groundwater levels have been starting to recover from overpumping in the 1980s. It is noteworthy that most of the long-term monitoring wells in the CVGB are situated within agricultural or prison operations, complicating extrapolation of any drawdowns shown in those data to the CVGB as a whole due to the site-specificity of those wells' cones of depression (a "cone of depression" refers to drawdown which occurs in a well when it is pumped, causing a conical-shaped gradient in the surrounding aquifer that results from water flowing from areas of high to low pressure; when two or more cones of depression intersect each other, the effect on drawdown (increasing depth to groundwater) is combined and water table levels drop substantially). (NPS 2010)

Due to the site-specific effects that cones of depression have on groundwater monitoring efforts, and the lack of data from non-pumping wells in the CVGB, existing groundwater data is not sufficient to characterize groundwater level trends throughout the CVGB. For these same reasons, existing data is not sufficient to determine with certainty that groundwater level trends in the CVGB, or in a portion of the CVGB, have recovered substantially since the cessation of large-scale agricultural pumping in the late 1980s. Therefore, although recent data indicates that groundwater level trends may be starting to recover in the vicinity of the proposed DHSP site, as noted by the NPS and discussed above, it is conservatively assumed that groundwater trend analyses are inconclusive.

Storage Characteristics

The California DWR reports that in 1975, the total storage capacity of the CVGB was understood to be 9,100,000 acre-feet, and that in 1979 the recoverable storage of this basin was understood to be 15,000,000 acre-feet (DWR 2004a). It is important to note that "storage capacity" does not reflect the actual amount of groundwater in storage, or the available groundwater supply, but rather is a function of the porosity of subsurface materials and the quantity of water that could theoretically be contained in the subsurface, based on this porosity. According to the DWR, the upper 100 feet of saturated sediments in the CVGB may have 900,000 acre-feet of groundwater in storage (DWR 2004a).

Safe Yield and Water Budget

The definitions of several terms which are critical to the analysis of groundwater conditions are listed below, as these terms are used throughout the following section.

- **Safe Yield** refers to the quantity of groundwater that can be withdrawn from a source or supply over a period of years without resulting in adverse effects such as depleting that source beyond its ability to be replenished annually, or impairing the native groundwater quality (SWRCB 2012). The safe yield may also be referred to as the "perennial yield."
- **Water Budget** refers to the annual difference in quantity between all inflows to a groundwater basin and all outflows from that basin, accounting for both natural and human-related sources and uses.
- **Overdraft** refers to the condition where a groundwater basin is drawn down beyond its ability to be replenished annually, or where the total production or outflow of water from all sources within a particular basin is less than the total recharge of water from all sources into that basin. Overdraft may occur on the short-term, where a groundwater basin recovers over a period of months or years, or it may be long-term and persistent, where a groundwater basin is consistently over-used and not provided the opportunity to recover. Overdraft conditions are not sustainable and can cause permanent harm to a groundwater resource; overdraft it is considered an adverse effect and is closely considered in this analysis.

There is currently a lack of long-term consistent groundwater monitoring data from throughout the CVGB, such as would be required to calculate safe yield, water budget, and overdraft (if present in the basin). Therefore, it is necessary to make reasonable assumptions in characterizing these aspects of the CVGB. A series of environmental analyses associated with other projects proposed for construction in this area have included estimates of safe yield and budget in the CVGB; the Draft EIS for the proposed DHSP included assumptions based on data and conclusions drawn from several of these analyses. In recent years, federal agencies including the NPS, the USGS, and the BLM have generated their own studies and analyses of the CVGB, some of this draw conclusions contrary to those used in the Draft EIS for the proposed DHSP. Therefore, this section has been revised to include discussion of all known professional opinions and conclusions regarding the current condition of the CVGB.

The DWR reports that in 1952, extractions from the CVGB totaled 11 acre-feet, increasing to 9,100 acre-feet in 1966, representing an increase of 82,627 percent over 14 years (DWR 2004a). As described under "Groundwater Level Trends," the DWR also reports stable groundwater levels in wells within the basin in 1963, suggesting that water use was being sustained by basin capacity at that time. The DWR reports no more recent estimates of safe yield for the CVGB. However, analyses of groundwater conditions in the CVGB have been prepared for other projects proposed in this area. In 1992, a safe yield amount of 12,200 afy was adopted in the EIS for the Eagle Crest Landfill Project. The BLM considered the Eagle Crest EIS estimate of safe yield to be low because the calculation appears to have used an amount of recharge from precipitation that was based on recharge to only a portion of the basin (BLM 2011a). In 2011, a revised water budget was adopted in the EIS for the Palen Solar Power Project, based on a wider array of available data than the 1992 Eagle Crest EIS, including but not limited to: published literature, water budget information from the DWR, data compiled by the California State Prison Authority, and other available information, as discussed below (BLM 2011a). The groundwater budget pre-

pared for the Palen Solar Power Project is summarized in Table 3.20-2 and discussed in the text following this table, with respect to the proposed Desert Harvest Solar Project.

Table 3.20-2. Estimated Budget for the CVGB, Based on Other Studies in the DHSP Area

Budget Components	Acre-Feet per Year
Inflow	
Recharge from Precipitation	9,448
Underflow from Pinto Valley and Orocopia Valley Groundwater Basins[1]	3,500
Irrigation Return Flow	800
Wastewater Return Flow	636
Total Inflow	14,384
Outflow	
Groundwater Extraction	–10,361
Underflow to Palo Verde Mesa Groundwater Basin	–400
Evapotranspiration at Palen Dry Lake	–350
Construction of the Desert Sunlight Solar Farm Project	–650[2]
Total Outflow	–12,361
Budget Balance (Inflow – Outflow)	2,623

Source: BLM 2011a; BLM 2011b; CEC 2009.

1 - As described under "Recharge and Connectivity," the DWR identifies that the CVGB receives underflow from the Pinto Valley and Cadiz Valley Groundwater Basins (DWR 2004a), while the BLM identifies that the CVGB receives underflow from the Pinto Valley and Orocopia Valley Groundwater Basins (BLM 2011a). The DWR has not prepared a hydrologic budget for the CVGB or identified the quantity of underflow contributed to the CVGB from the Pinto and Cadiz Valley Groundwater Basins, whereas the BLM has prepared a hydrologic budget for the CVGB and identified the quantity of underflow contributed to the CVGB from the Pinto and Orocopia Valley Groundwater Basins. Therefore, due to the availability of quantitative data, this groundwater budget characterizes underflow from the Pinto and Orocopia Valley Groundwater Basins, but not the Cadiz Valley Groundwater Basin.

2 - Environmental baseline conditions are defined as the existing physical conditions at the time of publication of the Notice of Intent for the Desert Harvest Solar Project (September 15, 2011). The solar field associated with the Desert Sunlight Solar Farm project was under construction at the time of preparation of the Notice of Intent. Table 2.2-2 of the Final EIS prepared for the Desert Sunlight Solar Farm project (BLM 2011b) indicates that construction of the solar field requires a total water supply of 1,200 to 1,300 acre-feet, over a 26-month construction period, or roughly 600 to 650 afy. In order to be conservative, an outflow of 650 afy associated with the Desert Sunlight solar field has been incorporated into the current groundwater budget for the CVGB to characterize baseline conditions.

Recharge associated with the potential Chuckwalla Groundwater Storage Program, described above in the discussion of "Recharge and Connectivity," is not accounted for in the groundwater budget summarized in Table 3.20-2 because at the time of preparation of the Draft EIS, this program has not been implemented. Table 3.20-2 indicates that the current total inflow to the CVGB is 14,384 afy and the current total outflow is 12,361 afy, resulting in a groundwater budget balance, or total outflow subtracted from total inflow, of 2,623 afy. This positive hydrologic budget balance indicates that, according to the assumptions used in constructing the balance shown in Table 3,20-2, the CVGB is not currently affected by long-term overdraft conditions.

It is important to note that the estimates provided in Table 3.20-2 are based on information and assumptions contained in studies conducted for other projects in the vicinity of the proposed DHSP. Independent analyses of the CVGB conducted in recent years have drawn conclusions which are contrary to the budget presented in Table 3.20-2, particularly with regards to the rate of groundwater recharge. Therefore, the groundwater budget presented below in Table 3.20-3 is based on conclusions drawn by the NPS and USGS in their independent analysis of the CVGB and surrounding basins.

Table 3.20-3. Estimated Budget for the CVGB, based on NPS and USGS Conclusions

Budget Components	Acre-Feet per Year
Inflow	
Recharge from Precipitation	2,060 – 6,125
Underflow from Pinto Valley and Orocopia Valley Groundwater Basins	953 – 1,906
Irrigation Return Flow	800
Wastewater Return Flow	636
Total Inflow	4,449 – 9,467
Outflow	
Groundwater Extraction	–10,361
Underflow to Palo Verde Mesa Groundwater Basin	–400
Evapotranspiration at Palen Dry Lake	–350
Construction of the Desert Sunlight Solar Farm Project	–650[2]
Total Outflow	–12,361
Budget Balance (Inflow – Outflow)	–2,894 – –7,912

Source: NPS 2010; BLM 2012

Table 3.20-3 indicates that the current total inflow to the CVGB ranges between 4,449 and 9,467 afy, while the current total outflow rate for the CVGB is 12,361 afy. The resulting balance shown in Table 3.20-3 is negative, indicating groundwater overdraft conditions ranging between 2,894 and 7,912 afy.

A comparison of Tables 2.30-2 and 2.30-3 show that the main differences in these water budget calculations occurs in the estimates of recharge from precipitation and recharge from underflow. Due to variability in expert opinion and associated estimations and conclusions, it is important to assess each component of the budget presented in Tables 3.20-2 and 3.20-3 in detail. Therefore, each component of the water budgets presented above is discussed in the following sections, and assumptions used to define the water budget components associated with both budgets provided above (Tables 3.20-2 and 3.20-3) are thoroughly defined in the following discussions.

Precipitation and Underflow

The California DWR has not published an estimated rate of recharge from precipitation to the CVGB, and estimates of recharge from precipitation that have been prepared in support of other projects in the area have had variable results. Similarly, there is also variability in estimates of recharge to the CVGB associated with underflow from the Pinto and Orocopia Valley Groundwater Basins, also as identified in environmental analyses for other projects in the area. Table 3.20-4, below, shows the discrepancies in recharge quantities identified in the environmental analyses prepared for various other projects in the DHSP area, specifically as related to recharge from precipitation and from hydrologically connected groundwater basins (noting that the CVGB also receives recharge from irrigation and wastewater return flow, which are described below).

Table 3.20-4. Comparison of Natural Recharge Estimates from Various Studies

Study	Recharge from Precipitation (afy)	Underflow from Pinto and Orocopia Basins (afy)	Total Recharge from Precipitation and Underflow
Genesis Solar Project EIS[1]	9,448	3,500	12,948
Eagle Mountain Draft EIR[2]	5,500	6,700	12,200
Palen Solar Project EIS[3]	8,588	3,500	12,088
Eagle Mountain Draft EIS[4]	6,125	6,575	12,700
Low – High (Average)	5,500 – 9,448 (7,042)	3,500 – 6,700 (5,395)	12,088 – 12,948 (12,437)

1 - Source: CEC 2009.
2 - Source: SWRCB 2010.
3 - Source: BLM 2011b.
4 - Source: FERC 2010.

As shown in Table 3.20-4, estimates of recharge from precipitation and underflow that have been presented in other environmental analyses in the area range between 12,088 and 12,948 afy; this is a total difference of 860 afy, although the difference in precipitation estimates is 3,948 afy and the difference in underflow estimates is 3,200 afy.

Recharge from precipitation is estimated as a percentage of total precipitation in the Chuckwalla Valley. For instance, both the Palen and Genesis analyses assessed the quantity of recharge from precipitation by overlaying isohyetal maps over the Chuckwalla watershed boundaries and calculating the volume of average annual precipitation across the valley and bedrock portions of the watershed. Both analyses describe the Chuckwalla Valley watershed as being comprised of the Palen sub-watershed and the Ford sub-watershed, which receive total precipitation in the amounts of 156,000 afy and 159,000 afy, respectively; therefore, the Chuckwalla Valley watershed receives a total precipitation amount of 315,000 afy. (CEC 2009; BLM 2011b)

The Palen analysis estimated recharge from precipitation as 3, 5, and 7 percent of total incident precipitation in the watershed, noting that this equates to 8,588, 14,313, and 20,038 afy, respectively (BLM 2011b). The Genesis analysis estimated recharge from precipitation as a fraction of 2, 3, 5 and 10 percent of total incident precipitation in the watershed, noting that this equates to 6,300, 9,448, 15,750 and 31,500 afy, respectively (CEC 2009). Both analyses note that studies published by the USGS report 7 to 8 percent of precipitation falling on bedrock mountains in other arid basins goes to mountain front recharge, which would equate to 3 percent of the total precipitation that falls in the Chuckwalla Valley watershed; therefore, both analyses determine that 3 percent of total precipitation falling on the Chuckwalla Valley watershed is the lower estimate of recharge to the CVGB from precipitation. As noted above, total precipitation in the Chuckwalla Valley watershed equates to 315,000 afy; 3 percent of this estimate is approximately 9,450 afy. (CEC 2009; BLM 2011b)

Table 3.20-4 also notes rates of precipitation and underflow recharge that were identified in the EIR and EIS for the Eagle Mountain Pumped Storage Project. The EIS and EIR for the Eagle Mountain Pumped Storage Project, upon which the NPS' original comments regarding natural recharge were made, were produced by the Federal Energy Regulatory Commission (FERC) and the California State Water Resources Control Board (SWRCB), respectively (FERC 2010; SWRCB 2010). In the EIS and EIR analyses, the FERC and SWRCB relied upon analysis of the CVGB conducted by GEI Consultants and presented in a Technical Memorandum included as an appendix to both the EIS and EIR (FERC 2010; SWRCB 2010). The GEI Technical Memorandum discusses two methods of calculating recharge to the CVGB:

- The Maxey-Eakin method of modeling natural groundwater recharge rates and patterns was applied to the CVGB, and produced a range of between 600 and 3,100 afy; and
- The MWD Review Panel method cited in a study of the Fenner Basin, north of the CVGB, indicates a recharge range of 7,600 to 17,700 afy for the CVGB (NPS 2010).

GEI Consultants selected the MWD Review Panel method for assessing recharge rates to the CVGB. As noted throughout this section, professional opinions often conflict regarding the characterization of groundwater resources. In this case, GEI Consultants determined that the MWD Review Panel was an appropriate method to use in characterizing the CVGB, while the NPS contended in comments on the Eagle Mountain EIS and EIR that the MWD Review Panel is unrealistic (NPS 2010); NPS concerns are discussed further below.

As shown in Table 3.20-4, the Eagle Mountain EIS (FERC) and EIR (SWRCB) identified recharge from precipitation as 6,125 afy and 5,500 afy, respectively, and recharge from underflow as 6,575 afy and 6,700 afy, respectively. As noted in Table 3.20-2, the Draft EIS for the proposed DHSP identified recharge from precipitation as 9,448 afy (based on data from the Genesis Solar Project EIS), and recharge from underflow as 3,500 afy (based on data from the Genesis EIS and the Palen EIS). As shown in Table 3.20-4, 9,448 afy is the highest value for recharge from precipitation identified among the four listed analyses, while 3,500 afy is the lowest value for recharge from underflow.

According to the Genesis EIS and the Palen EIS, inflow to the CVGB from the Pinto Valley Groundwater Basin was estimated to be 3,173 afy, while inflow from the Orocopia Valley Groundwater Basin was estimated to be 1,700 afy (BLM 2011b; CEC 2009). Other studies indicate that subsurface flow to the CVGB from Orocopia Valley Groundwater Basin could be as low as several hundred afy (BLM 2011a). In order to account for this uncertainty, a combined subsurface inflow rate of 3,500 afy was assumed for both basins in the Draft EIS for the proposed DHSP. As shown in Table 3.20-4 and noted above, 3,500 afy is the lowest value for recharge from underflow identified among the four listed analyses. In addition, although the DWR has reported that Cadiz Valley Groundwater Basin contributes subsurface flow to CVGB, more recent work indicates that the Cadiz Valley Groundwater Basin does not contribute inflow to the CVGB (CEC 2009). Therefore, for the purposes of this EIS, safe yield for the CVGB is assumed to include subsurface flow from the Pinto Valley and Orocopia Valley Groundwater Basins but not the Cadiz Basin. In total, the Draft EIS for the proposed DHSP assumed recharge from precipitation and underflow to be 12,948 afy, as listed in Table 3.20-2.

As previously noted, there is substantial variation in expert opinion regarding the realistic rate of recharge to the CVGB from precipitation and underflow. In 2010, the NPS provided extensive comments on the EIS for the Eagle Mountain Pumped Storage Project, listed in Table 3.20-4 as identifying recharge from precipitation at 6,125 afy and recharge from underflow at 6,575 afy, for a total quantity of natural recharge at 12,700 afy, a quantity that is similar to that used in the Draft EIS for the proposed DHSP (12,948 afy). In their comments, the NPS identified substantially lower estimates of recharge from precipitation, and contended that the budget for the CVGB is actually negative, indicating that the basin is in a state of overdraft.

The NPS' conclusions regarding the CVGB water budget are based on research conducted by the U.S. Geological Survey (USGS) on groundwater basins around the town of Joshua Tree. Specifically, the principal areas of interest for the USGS study were the Warren, Joshua Tree, and

Copper Mountain Groundwater Basins (USGS 2004). None of these groundwater basins is adjacent to the CVGB (see Figure 3.20-3), and neither the USGS nor the NPS conducted groundwater monitoring in the CVGB, the Orocopia Valley Basin, or the Pinto Valley Basin in support of this study. Rather, the NPS draws conclusions about recharge in the CVGB, Pinto Valley Groundwater Basin, and Orocopia Valley Groundwater Basin using the USGS methodologies and conclusions in assessing the Warren, Joshua Tree, and Copper Mountain Groundwater Basins, and extrapolating data for applicability to the proposed DHSP area (NPS 2010). Groundwater basins in the proposed DHSP area are identified in Figure 3.20-3 (In comparison with Figure 3.20-3, which shows the CVGB and adjacent groundwater basins, Figure 3.20-1 shows surface water planning areas in the project region, including the Chuckwalla HU and the adjacent Joshua Tree HU – note that these HUs are surface water planning areas and are not the same as the CVGB and the Joshua Tree Groundwater Basin which, as noted above, are not hydrologically connected).

The USGS study involved collection of groundwater monitoring data from wells in the Warren, Joshua Tree, and Copper Mountain Groundwater Basins, and analysis of this data using a groundwater modeling program called INFILv3 (USGS 2004). As described in the USGS study (page 61), the INFILv3 watershed model results can have high uncertainty associated with the simplification of assumptions and uncertainty in model inputs, but was selected because it accounts for factors including climate, surface flows, and hydrologic processes in the upper unsaturated zone (the root zone), as well as physical characteristics of the drainage basin such as topography, surficial geology, soils, and vegetation; the INFILv3 model was considered by the USGS to have greater advantages than other methods of estimating recharge, such as empirical methods or geochemistry, because it accounts for a wide variety of natural factors (USGS 2004).

The results of the USGS study suggest that present-day groundwater recharge to basins "in the region of the Mojave Desert" is very limited, and that the majority of recharge to basins in this region may be coming from existing groundwater storage, not from natural replenishment (NPS 2010). Key results from the USGS study include the following:

- Sources of natural recharge to the Warren, Joshua Tree, and Copper Mountain Groundwater Basins are limited to infiltration of channelized stormflow runoff, groundwater underflow from neighboring basins, and septage infiltration;
- Infiltration of precipitation to depths below the root zone and subsequent groundwater recharge did not occur in the Joshua Tree area (to the west-northwest of the CVGB);
- Winter precipitation is the predominant source of groundwater recharge, based on Oxygen-18 and deuterium data collected in the Warren, Joshua Tree, and Copper Mountain Basins;
- Minimal recharge has reached the water table (associated with the Warren, Joshua Tree, and Copper Mountain Basins) since 1952, based on Carbon-14 data;
- Most recharge to the Warren, Joshua Tree, and Copper Mountain Basins likely occurs during unusually wet periods or isolated occurrences of extreme storms that are separated by relatively long (multi-year to multi-decade) periods of negligible recharge; and
- The vast majority of groundwater pumped from the Warren, Joshua Tree, and Copper Mountain Basins between 1958 and 2001 was removed from groundwater storage (as opposed to drawing on recharge), resulting in a 35-foot decline in measured groundwater levels in these basins (NPS 2010; USGS 2004).

As noted, the NPS extrapolated data and conclusions of the USGS study for applicability to the CVGB and contributing basins (Pinto Valley and Orocopia Valley Groundwater Basins), contending that the MWD Review Panel method used by GEI Consultants in support of the Eagle Mountain EIS and EIR grossly under-estimated recharge quantities, and the Maxey-Eakin methodology rejected by the GEI assessment provided a more realistic estimate of recharge. As previously noted, the Maxey-Eakin method identified recharge rates to the CVGB as a range of 600 to 3,100 afy, while the MWD Review Panel method identified a range of 7,600 to 17,700 afy. The NPS used results of the USGS study to derive a range of recharge coefficients, which were then applied to the project study area basins (CVGB, Pinto Valley Groundwater Basin, Orocopia Valley Groundwater Basin), to identify a estimated range of total recharge of 3,300 to 6,000 afy; the NPS notes that this estimate is consistent with the upper range of the Maxey-Eakin approach, suggesting that the Maxey-Eakin method is more realistic than the MWD Review Panel method used in the Eagle Mountain analysis (NPS 2010).

The NPS's recharge coefficients were derived by taking the total annual recharge estimates for the whole Joshua Tree study area (1,090 acre-feet) and the basins located west of the Pinto Valley (sub-basin CM18, 244 acre-feet), and dividing them by their respective basin areas (159,801 acres and 64,994 acres), to produce recharge coefficients of 0.0068 acre-feet/acre and 0.0038 acre-feet/acre, respectively. The NPS applied these extrapolated recharge coefficients to the CVGB, the Pinto Valley Groundwater Basin, and the Orocopia Valley Groundwater Basin to identify estimated ranges of recharge to each of those basins, and to estimate rates of flow from the Pinto and Orocopia Valley Basins into the CVGB. The NPS' recharge estimates for the CVGB are provided below, in Table 3.20-5.

Table 3.20-5. Natural Recharge Estimates Proposed by the NPS, Extrapolated from USGS Data

Source of Recharge to the CVGB	Estimated Quantity (afy)
Precipitation (Within the CVGB)	2,060 – 6,125
Pinto Valley Groundwater Basin	624 – 1,248
Orocopia Valley Groundwater Basin	329 – 658
Total Recharge from Precipitation and Underflow	3,013 – 8,031

Source: NPS 2010; BLM 2012; Godfrey et al. 2012

As described in the table above, the NPS' approach of extrapolating USGS data to estimate the rate of groundwater recharge to the CVGB indicates that the CVGB receives between 3,013 and 8,031 afy of recharge from in-basin precipitation and from underflow associated with the Pinto Valley and Orocopia Valley Groundwater Basins. The NPS further notes that the total annual streamflow recharge rates simulated by the USGS may be two to ten times greater than the measured total annual stream flow, suggesting that the recharge values estimated by the INFILv3 model described in the 2004 USGS study may also be high by a factor of two to ten (NPS 2010). If it is true that the USGS model is skewed by a factor of two to ten, total annual recharge to the CVGB and the Pinto Valley and Orocopia Valley Groundwater Basins could be as low as 300 to 3,000 afy; this range is nearly identical to the range predicted by the Maxey-Eakin method, which is the method preferred by the NPS (NPS 2010). However, assuming that the USGS simulated streamflow recharge rates are reasonable, the NPS also adopts the groundwater recharge rates shown in Table 3.20-5 as reasonable.

The range for groundwater recharge shown in Table 3.20-5 is substantially lower than the values shown in Table 3.20-4 (Comparison of Natural Recharge Estimates from Various Studies), which is why the water budget shown in Table 3.20-2, which was used in the Draft EIS analysis for the proposed DHSP, is so different from the water budget shown in Table 3.20-3, which has been incorporated to this analysis for the purposes of the Final EIS for the proposed DHSP. Table 3.20-6, below, provides a side-by-side comparison of the recharge ranges identified by other studies in the DHSP area and by the NPS (based on the USGS 2004 analysis).

Table 3.20-6. Comparison of Natural Recharge Estimates

Source of Estimate	Identified Range (afy)	Average (afy)
Other Studies in the DHSP Area	12,088 – 12,948	12,437
NPS Study (based on USGS)	3,013 – 8,031	5,522
Difference Between Expert Opinions	9,075 – 4,917	6,915

Table 3.20-6 indicates vast differences in estimated rates of recharge to the CVGB from natural sources (precipitation and underflow). These differences are the result of several factors, including but not limited to the following: widely varying expert opinion on the subject of groundwater recharge, uncertainties inherent in the use of computer models to simulate groundwater behavior and characteristics, and a general lack of long-term groundwater monitoring data. In order to address the discrepancy shown in Table 3.20-6 and appropriately characterize potential conditions in the CVGB, while presenting a full range of possible outcomes and consequences associated with the proposed DHSP, this Final EIS incorporates discussion of all expert opinions regarding the rate of natural recharge to the CVGB, and the effect that this value has on the overall water budget.

In further analysis of recharge to the CVGB, the NPS constructed comparative water balances for the CVGB over 60 years of historical pumping in the basin, using the recharge estimate identified by GEI Consultants for the Eagle Mountain analyses of 12,700 afy, in comparison to mean extrapolated lower recharge estimate of 3,013 afy identified by the NPS in aforementioned comments on the Eagle Mountain analyses. The NPS constructed these historic water balances using information presented in the Eagle Mountain EIS (FERC) and EIR (SWRCB). Through this comparative analysis, the NPS concluded that if the estimates of water stored in the CVGB identified in the Eagle Mountain analyses were true, the volume of water in storage in the CVGB should have increased between 1948 and 2007 by approximately 267,000 acre-feet, equating to a rate of 4,450 afy (NPS 2010). According to the NPS, such an increase would only be possible if one of the following occurred: average water level rise of approximately 18 feet across the basin; increased discharge by ET, and/or increased subsurface outflow from the CVGB. The NPS determined that none of these three indicators is evident in the CVGB, based on the best available information. (NPS 2010; Godfrey et al. 2012)

Conversely, using the NPS estimates for recharge to the CVGB, the volume of water in storage should have decreased between 1948 and 2007 by approximately 314,000 acre-feet, which roughly equates to an average water level decline of 21 feet across the basin. The NPS further justifies their adopted lower recharge estimates by citing what appear to be generally declining water levels across most of the CVGB over the last 60 years, coinciding with the conclusions of their historic analysis. The NPS concludes that their historical water balance analysis suggests

that (1) recharge of 12,700 afy for the CVGB is likely too high, and (2) the CVGB overall may have been in an ongoing state of overdraft for several decades. (Godfrey et al. 2012)

As described throughout this section, there is a general lack of agreement among experts regarding the rate of groundwater recharge to the CVGB and connected groundwater basins. In the absence of comprehensive, long-term groundwater monitoring data collected throughout the CVGB, it is expected that there will continue to be academic disagreement on what the annual recharge rates and perennial yields are in the CVGB. Considering analysis produced by the NPS and based on USGS research, it is possible that annual recharge to the CVGB may be much lower than the recharge estimates identified in the Draft EIS for the proposed DHSP, and used in characterizing potential impacts associated with implementation of the DHSP. Therefore, the analysis of groundwater recharge and potential effects of the proposed DHSP on groundwater has been expanded to address all known professional opinions regarding groundwater recharge.

Irrigation Return Flow

The amount of applied irrigation water that returns to recharge a groundwater basin depends on the soil, crop type, amount and method of irrigation, and climatic factors. In water budget calculations for the Chuckwalla Planning Area in support of California Water Plan updates, an irrigation return flow of 9 to 11 percent was calculated for 1998, 2000, and 2001, respectively. A 10 percent return flow is therefore considered reasonable for deep percolation from irrigation. Current pumpage associated with irrigation return flow is estimated to be 7,700 afy in the CVGB, accounting for 6,400 afy from agriculture, 215 afy from aquaculture pumping, and 1,090 afy from Tamarisk Lake. Therefore, return flows calculated using the 10 percent factor are approximately 800 afy. (BLM 2011a)

Wastewater Return Flow

Wastewater return flows from the Chuckwalla and Ironwood State Prisons contribute to the CVGB budget, as well as residential use particularly in the Lake Tamarisk development near Desert Center (BLM 2011a). Chuckwalla State Prison was constructed in 1988, and Ironwood State Prison became operational in 1994. These prisons use an unlined pond to dispose of treated wastewater, a large percentage of which is reported to infiltrate into the subsurface and recharge the CVGB (BLM 2011a). For the years 1998 through 2001, the California DWR Division of Planning and Local Assistance (CDWR-DPLA) reported that deep percolation of applied urban water in the Chuckwalla Planning Area (assumed to be wastewater return flow) was 500 to 800 afy. According to authorities at the State prison complex, approximately 600 afy of treated effluent recharges the CVGB. Water budget information for the proposed Eagle Crest Pumped Storage Project indicates 795 afy of treated effluent are recharged by the prisons, but that populations at the prisons are projected to reduce by about 35 percent in order to alleviate over-crowding, and that associated recharge to the CVGB would also reduce to 600 afy (ECE 2008; FERC 2010). For the purposes of this analysis, it is conservatively assumed that wastewater return flow from the prisons is 600 afy, accounting for a reduction in prisoner population that could occur during implementation of the DHSP. An additional source of wastewater return flow in the basin is 36 afy from the Lake Tamarisk development near Desert Center (BLM 2011a). With consideration to the Chuckwalla and Ironwood State Prisons, as well as the Lake Tamarisk development, total wastewater return flow to the CVGB is estimated to be 636 afy.

Groundwater Extraction

Groundwater pumping in the CVGB includes agricultural water demand, pumping for Chuckwalla and Ironwood State prisons, pumping for the Tamarisk Lake development and golf course, domestic pumping, and a minor amount of pumping by Southern California Gas Company. Most of the current groundwater pumping in the CVGB occurs in the western portion of the basin, near the community of Desert Center. Current groundwater pumping rates are estimated to be 7,900 afy in the western CVGB and 2,605 afy in the eastern basin. Agricultural production is limited to the western portion of the basin, with the exception of a relatively limited amount of acreage that is associated with the State prisons. (BLM 2011a)

As described in a footnote to Table 3.20-2, baseline environmental conditions relevant to the CVGB estimated budget include groundwater extractions associated with construction of the solar field for the adjacent Desert Sunlight Solar Farm project, which is under construction of its first phase as of the initiation of analysis for this EIS. Water demands associated with renewable energy projects which have been approved but are not yet under construction (at the commencement of analysis for this EIS, or September 2011) are not identified under existing groundwater extractions because these projects have not yet initiated groundwater pumping and consumption. One exception to this is the Genesis Solar Energy Project, which was issued a Notice to Proceed on August 24, 2011, and therefore could have been under active construction by September 2011. Section 2.2.3 (page 2-11) of the Final EIS for the Genesis project indicates that the first month of construction would entail site preparation, which includes detailed construction surveys, mobilization of construction staff, grading, and preparation of drainage features (BLM 2010). It is reasonably assumed that if construction of the Genesis project initiated immediately upon issuance of the Notice to Proceed, construction activities requiring the project's full water requirement of 1,368 afy would not have initiated within a few days due to the need to complete site preparation activities (noted above) which would not require a water source. Water demands associated with the Genesis project as well as other reasonably foreseeable projects in the DHSP area are addressed in the cumulative impacts discussion presented in Section 4.20.13 of this EIS.

Underflow to Palo Verde Mesa Groundwater Basin

As described above in the discussion of "Recharge and Connectivity," the CVGB contributes subsurface flow to the Palo Verde Mesa Groundwater Basin. Subsurface outflow to the Palo Verde Mesa Groundwater Basin was estimated in 1973 to be 400 afy, based on a cross sectional profile of the boundary between the Palo Verde Mesa Groundwater Basin and the CVGB which was derived using geophysical methods and regional data regarding groundwater gradients and hydraulic conductivity. This estimate was revised in 1986 based on the results of pump testing at Chuckwalla State Prison, resulting in estimated outflow of 870 afy. In 1990, outflow was estimated to be 1,162 afy based on return flow from prison wastewater disposal; however, the rationale for this adjustment was not provided. In 1994, gravity data was used to determine that the area through which discharge occurs is significantly more limited than previously thought due to the presence of a buried bedrock ridge. Therefore, for the purposes of this current estimate of groundwater budget for the CVGB, the most recent available outflow rate is considered to be 400 afy. (BLM 2011a)

Evapotranspiration at Palen Dry Lake

Groundwater elevation contour mapping suggests that groundwater may occur near the surface beneath the northwestern 25 percent of Palen Lake. Therefore it is considered possible that a portion of Palen Lake is operating as a wet playa (described above under "Surface Water Resources). Groundwater levels beneath the southeastern portions of Palen Lake, and a small ancillary playa located 1 mile southeast of Palen Lake, were reported as being 20 to 30 feet bgs in 1979, suggesting that Palen Lake would be a dry playa at various times. (BLM 2011a)

Groundwater levels in a well located 2 miles north of Palen Lake were reported to be 20 to 25 feet bgs between 1932 and 1984. Surface elevation at Palen Lake 2 miles to the south of this well is 460 feet above mean sea level (amsl), or 40 feet lower; it therefore appears possible that groundwater levels are very close to the ground surface beneath the northern portion of the playa. It is possible that an area in the northern portion of Palen Lake is discharging groundwater by evaporation as a wet playa. (BLM 2011a)

Field work conducted in December of 2009 included the implementation of borings to 10 feet bgs in an identified salt pan area in the northwest portion of Palen Dry Lake. The moisture content of the soil was observed to increase with depth in both borings, and free groundwater was encountered at a depth of 8 feet bgs in one of the borings. A depth of 6 to 10 feet bgs is generally the maximum depth of free water documented beneath discharging playas, suggesting that local groundwater could be shallow enough to discharge at the surface by capillary rise and evaporation. (BLM 2011a)

Groundwater discharge rates were estimated based on reported groundwater discharge rates at other playas, the area of identified salt accumulation in Palen Lake, and an evident episodic or intermittent nature of salt accumulation. Measured evapotranspiration rates at Franklin Lake Playa were used to form a basis for this estimate, calculated to be 38 to 41 centimeters per year (cm/year) (1.3 to 1.4 feet per year) based on the Energy-Balance Eddy-Correlation method, which is reported to be the most reliable method by the USGS. These rates are considered a conservative measure of evapotranspiration for active wet playa areas at Palen Lake. (BLM 2011a)

The total area of potential groundwater discharge at Palen Lake is estimated to be 2,000 acres, with salt pan occupying 700 acres of this total. Due to differences between Palen Lake and Franklin Lake Playa, a groundwater discharge rate that is half that at Franklin Lake Playa was adopted for Palen Lake (0.0583 feet/acre/month of water), equating to approximately 350 afy over an area of 2,000 acres for three months of the year. (BLM 2011a)

Colorado River Accounting Surface

The USGS has indicated that the CVGB is within a basin tributary to the Colorado River, indicating that wells which draw groundwater from the CVGB could be withdrawing water from the Colorado River Aquifer (USGS 2008). All water in the Colorado River is apportioned for use, meaning it is designated for specific users and uses and may not be consumed beyond the conditions of designated rights. Due to the hydrologic connection between the CVGB and the Colorado River, all groundwater production at the DHSP site from wells that have a static water-level elevation near (within +/- 0.84 feet at the 95-percent confidence level), equal to, or below

the elevation of the Accounting Surface are presumed to yield water that will be replaced by water from the Colorado River.

The USGS has developed a concept for determining groundwater levels in wells which would be recharged by Colorado River water (USGS 2008):

> *The accounting surface represents the elevation and slope of the unconfined static water table in the river aquifer outside the flood plain and the reservoirs of the Colorado River that would exist if the river were the only source of water to the river aquifer… This method provides an organized way to identify those wells presumed to yield water that will be replaced by water from the river by determining if the elevation of the static water table at a well is above or below the accounting surface.*

The Colorado River Accounting Surface, as defined above, for waters in the CVGB is 234 feet amsl, which suggests that groundwater at or below an elevation of 234 feet amsl can be considered recharge from the adjudicated Colorado River (JR Associates 2009).

Groundwater monitoring data in the vicinity of the DHSP site indicates that groundwater elevation ranges between 385 and 504 feet amsl, and groundwater elevation measured at wells proximal to the Desert Sunlight Solar Project site, adjacent to the north of the proposed DHSP site, ranges between 483 and 488 feet amsl. A review of cross sections and potentiometric maps from prior investigations of the Upper Chuckwalla Valley show that the water level elevation has been interpreted to be between about 500 to 540 feet amsl in this area. These water level data, obtained from both groundwater well monitoring and interpretation of potentiometric surfaces, were collected between 1961 and 1992, and indicate that static groundwater level in the vicinity of the DHSP site is above the Colorado River Accounting Surface. Additionally, groundwater monitoring data obtained in the year 2000 at a well near the community of Desert Center (Well 5S/16E-17P92), approximately three miles south of the proposed DHSP site, indicate a water elevation of 462 feet amsl, or approximately 230 feet above the Colorado River Accounting Surface. (AECOM 2011)

Groundwater Quality

Groundwater quality varies throughout the CVGB. South and west of Palen Lake, groundwater is typically sodium chloride to sodium sulfate-chloride in character. Total Dissolved Solids (TDS) concentrations across the basin range from 274 to 12,300 mg/L. Sulfate, chloride, fluoride, and TDS concentrations are high for domestic use, while boron, TDS, and sodium concentrations are high for irrigation use. (DWR 2004a)

Beneficial uses for groundwater resources are identified by the planning area, and by the HUs encompassed by each planning area. Table 3.20-7, below, identifies the beneficial uses relevant to groundwater resources within the Hayfield Planning Area. As discussed in the introduction to this section, the DHSP is located within the Chuckwalla HU, which, as identified below and in the Basin Plan, is also located within the Hayfield Planning Area. Other HUs located within the Hayfield Planning Area include the Rice HU and the Hayfield HU. For consistency with the Basin Plan, Table 3.20-7 identifies beneficial uses for groundwater resources within all three HUs located within the Hayfield Planning Area, although the project would only occur within the Chuckwalla HU.

Table 3.20-7. Beneficial Uses of Groundwater Resources in the Project Area and Vicinity

	Beneficial Use Designation[1]		
Hayfield Planning Area	MUN[2]	IND	AGR
Rice Hydrologic Unit	X		
Chuckwalla Hydrologic Unit	X	X	X
Hayfield Hydrologic Unit			

1 - MUN: Municipal and Domestic Supply; IND: Industrial Service Supply; AGR: Agriculture Supply.
2 - At such time as the need arises to know whether a particular aquifer which has no known existing MUN use should be considered as a source of drinking water, the Regional Board will make such a determination based on the criteria listed in the "Sources of Drinking Water Policy" in Chapter 2 of this Basin Plan. An "X" placed under the MUN in this table for a particular hydrologic unit indicates only that at least one of the aquifers in that unit currently supports a MUN beneficial use. For example, the actual MUN usage of the Imperial hydrologic unit is limited only to a small portion of that ground water unit.
Source: Colorado River Basin RWQCB 2006b.

Potential impacts associated with beneficial uses and water quality are discussed in Section 4.20 of this EIS.

3.21 SOLID AND HAZARDOUS WASTES

This section describes the existing conditions related to solid and hazardous wastes that could be affected by implementation of the proposed Desert Harvest Solar Project (DHSP). The project study area includes all areas where the proposed project and alternatives could affect the following: wastes generated on-site, disposal of wastes generated on-site, septic system, landfill use and capacity, and emergency response and evacuation relevant to hazardous wastes.

3.21.1 Applicable Plans, Policies, and Regulations

Existing laws and regulations applicable to solid and hazardous wastes are described below. In some cases, compliance with these existing laws and regulations would serve to reduce or avoid certain impacts that might otherwise occur with the implementation of the proposed project or alternatives.

Federal

Comprehensive Environmental Response, Compensation, and Liability Act (Superfund) of 1980 (42 USC. § 9601 et seq.)

The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) provides a federal Superfund to clean up uncontrolled or abandoned hazardous waste sites as well as accidents, spills and other emergency releases of pollutants and contaminants into the environment. The United States Environmental Protection Agency (USEPA) generally administers CERCLA. This law provides broad federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment.

Superfund Amendments and Reauthorization Act of 1986 (Title III 40 CFR§ 68.110 et seq.)

The Superfund Amendments and Reauthorization Act amended CERCLA and established a nationwide emergency planning and response program, and imposed reporting requirements for businesses that store, handle or produce significant quantities of extremely hazardous materials. Administered by the USEPA, the act requires states to implement a comprehensive system to inform local agencies and the public when a significant quantity of such materials is stored or handled at a facility. Additionally, the Superfund Amendments and Reauthorization Act identifies requirements for planning, reporting, and notification concerning hazardous materials.

Clean Water Act (33 USC. §1251 et seq.)

The Clean Water Act (CWA) is the principal federal statute protecting navigable waters of the United States and adjoining shorelines from the discharge of pollution from point sources. Since its enactment, the CWA has formed the foundation for the regulations and permitting of pollution prevention and response measures in waters subject to federal jurisdiction. The CWA establishes basic structure for regulating discharges of pollutants into the waters of the United States; establishes pollution control programs such as setting wastewater standards for industry; and sets water quality standards for all contaminants in surface waters. The CWA generally applies to surface Waters of the United States, and the Army Corps of Engineers (USACE) has not formally determined whether any jurisdictional waters occur on the site of the proposed project or alternatives. However, based on previous USACE determinations that waters are not jurisdictional on the adjacent Desert Sunlight Solar Farm project, it is not expected that USACE will

take jurisdiction for the proposed project and alternatives. Nevertheless, CWA requirements are set forth below. Please see Section 3.20.1 for further discussion of the CWA.

Oil Pollution Prevention (40 CFR Part 112)

The goal of the oil pollution prevention regulation in 40 Code of Federal Regulations (CFR) Part 112 is to prevent oil discharges from reaching navigable waters of the United States or adjoining shorelines. Facilities that could reasonably be expected to discharge oil into navigable waters in quantities that may be harmful are required to develop and implement Spill Prevention, Control and Countermeasures (SPCC) plans per the SPCC rule.

Occupational Safety and Health Administration

The Occupational Safety and Health Administration administers health standards that (1) provide regulations for safety in the workplace; (2) regulate construction safety; and (3) require a Hazards Communication Plan. The plan includes identification and inventory of all hazardous materials for which Material Safety Data Sheets would be maintained, and employee training in safe handling of said materials.

State

California Environmental Protection Agency

The California Environmental Protection Agency (Cal EPA) unifies California's environmental authority, consolidating the California Air Resources Board (CARB), State Water Resources Control Board (SWRCB), Regional Water Quality Control Board (RWQCB), Integrated Waste Management Board (IWMB), the DTSC, Office of Environmental Health Hazard Assessment, and the Department of Pesticide Regulation under one agency. The California Hazardous Waste Control Law is administered by Cal EPA's DTSC.

Department of Toxic Substance Control

The DTSC is the primary agency in California that regulates hazardous waste, administers clean-ups of existing contamination and looks for ways to reduce hazardous waste produced in California. The DTSC regulates hazardous waste in California primarily under the authority of RCRA and the California Health and Safety Code. The DTSC manages, maintains and monitors the Cortese list of hazardous waste sites. The Cortese list, or Hazardous Waste and Substances Sites List, is a planning resource used by the state, local agencies, and developers to comply with CEQA requirements in providing information about the location of hazardous materials release sites.

Integrated Waste Management Act

The Integrated Waste Management Act of 1989 (PRC 40050 et seq. or Assembly Bill (AB 939, codified in PRC 40000), administered by the California Integrated Waste Management Board, requires all local and county governments to adopt a Source Reduction and Recycling Element to identify means of reducing the amount of solid waste sent to landfills. This law sets reduction targets at 25 percent by the year 1995 and 50 percent by the year 2000. To assist local jurisdictions in achieving these targets, the California Solid Waste Reuse and Recycling Access Act of

1991 requires all new developments to include adequate, accessible, and convenient areas for collecting and loading recyclable and green waste materials.

Local

Riverside Code Section 8.124 (Ordinance 650.5) – Septic System

This ordinance regulates the discharge of sewage in the unincorporated areas of Riverside County. An on-site water treatment system (OWTS) means any individual or community onsite wastewater treatment, pretreatment and dispersal system including septic systems. An application must be submitted to the Riverside County Department of Environmental Health (DEH) for approval, and the OWTS will be subject to an annual operating permit.

County of Riverside Department of Environmental Health

The County of Riverside DEH acts as the Certified Unified Program Agency (CUPA) for Riverside County and is responsible for reviewing Hazardous Materials Business Plans. A CUPA is a local agency that has been certified by Cal EPA to implement state environmental programs related to hazardous materials and waste. The DEH is responsible for protecting the health and safety of the public and the environment of Riverside County by assuring that hazardous materials are properly handled and stored. The DEH accomplishes this through inspection, emergency response, site remediation and hazardous waste management services. The specific responsibilities of the DEH include the following:

- Inspecting hazardous material handlers and hazardous waste generators to ensure full compliance with laws and regulations.
- Implementing CUPA programs for the development of accident prevention and emergency plans, proper installation, monitoring, and closure of underground storage tanks and the handling, storage and transportation and disposal of hazardous wastes.
- Providing 24-hour response to emergency incidents involving hazardous materials or wastes in order to protect the public and the environment from accidental releases and illegal activities.
- Overseeing the investigation and remediation of environmental contamination due to releases from underground storage tanks, hazardous waste containers, chemical processes or the transportation of hazardous materials.
- Conducting investigations and taking enforcement action as necessary against anyone who disposes of hazardous waste illegally or otherwise manages hazardous materials or wastes in violation of federal, state or local laws and regulations.

3.21.2 Solid and Hazardous Wastes Existing Conditions

The DHSP is located in eastern Riverside County. The solar facility would be north of the community of Desert Center and just south of the Desert Sunlight Solar Farm project, which is currently under construction. The environmental baseline for the proposed project and alternatives includes the preliminary construction of the Desert Sunlight Solar Farm project as of the commencement of analysis for this EIS in September 2011.

Non-Hazardous Wastes

The Riverside County Waste Management Department (RCWMD) is responsible for providing landfill capacity for non-hazardous waste materials within Riverside County. RCWMD operates six landfills (Badlands, Blythe, Desert Center, Lamb Canyon, Mecca II, and Oasis) and has a contract agreement for waste disposal with an additional private landfill (El Sobrante). RCWMD also administers several transfer station leases. RCWMD ensures that Riverside County has a minimum of 15 years of capacity, at any time, for future landfill disposal. (RCWMD 2011a)

Hazardous Wastes

A hazardous material is any substance that, because of its quantity, concentration, or physical or chemical properties, may pose a hazard to human health and the environment. Under Title 22 of the California Code of Regulations (CCR), the term "hazardous substance" refers to both hazardous materials and hazardous wastes. Both of these are classified according to four properties: (1) toxicity; (2) ignitability; (3) corrosiveness; and (4) reactivity (CCR Title 22, Chapter 11, and Article 3). A hazardous material is defined in CCR, Title 22 as:

> *. . . A substance or combination of substances which, because of its quantity, concentration, or physical, chemical or infectious characteristics, may either (1) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (2) pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported or disposed of or otherwise managed* (CCR, Title 22, Section 66260.10).

Hazardous materials in various forms can cause death, serious injury, long-lasting health effects, and damage to buildings, homes, and other property. Hazards to human health and the environment can occur during production, storage, transportation, use, or disposal of hazardous materials. There are no known hazardous wastes on the solar facility site. Hazardous wastes in the region are discussed in Section 3.13 (Public Health and Safety).

A comprehensive list of Registered Hazardous Waste Transporters Serving Riverside County is provided and updated by the Riverside County Department of Environmental Health, Environmental Protection and Oversight Division (RCWMD 2011b).

3.22 CDCA PLAN CONFORMANCE

The proposed project and alternatives would be developed on federal and private lands that are administered by the BLM and Riverside County, respectively. In the CDCA Plan, the Desert Harvest Solar Project (DHSP) site includes land that is classified as Multiple-Use Class M (Moderate Use) and the gen-tie line Alternative E would cross land that is classified as Multiple-Use Class L (Limited). Gen-tie line alternatives B, C, and D would also cross a very small portion of land classified as Multiple-Use Class L as they enter the Red Bluff Substation. The Plan states that solar power facilities may be allowed within Moderate and Limited Use areas after NEPA requirements are met. Within Multiple Use Class M the CDCA Plan allows for transmission lines above 161 kV within designated corridors. If a new transmission line is proposed that is above 161 kV and not within a designated corridor, either the CDCA Plan could be amended to designate a new corridor or the CDCA Plan could be amended to 'allow' the transmission line outside a corridor. This EIS is the mechanism for complying with the NEPA requirements.

3.22.1 Existing California Desert Conservation Area Plan and Amendments

The 25-million-acre CDCA was designated by Congress in 1976 through the Federal Land Policy Management Act (FLPMA) of 1976. The area, which encompasses portions of the Mojave, Sonoran, and Great Basin Deserts, currently contains approximately 11 million acres of BLM-administered public lands. The 1980 CDCA Plan, as amended, serves as the land use guide for the management, use, development and protection of public lands within the CDCA. Public lands within the CDCA are managed based on the concepts of multiple-use, sustained yield, and maintenance of environmental quality. The DHSP site would be located on federal lands under the BLM's jurisdiction within the CDCA and would, therefore, be subject to the provisions of the CDCA Plan (as amended).

The goal of the CDCA Plan is to provide for the use of the public lands and resources of the CDCA, including economic, educational, scientific, and recreational uses, in a manner that enhances without diminishing the environmental, cultural, and aesthetic values of the desert and its productivity. This goal is to be achieved through the direction given for management actions and resolution of conflicts outlined in the CDCA Plan. Direction is provided for BLM-administered public lands in four multiple-use classes. The multiple-use classifications describe the type and level or degree of use that is permitted within geographic areas. Further refinement of direction of management of resources within the CDCA is expressed in the goals for motorized vehicle access, geology, energy production and utility corridors and in certain site specific Plan decisions such as Areas of Critical Environmental Concern (ACECs).

While renewable energy development is allowed within the multiple-use class guidelines of the CDCA Plan, the Plan provides that a plan amendment is required for renewable energy projects not previously identified in the Plan.

The ROW required for the solar facility site is within an area that is designated as Multiple-Use Class M (Moderate Use) according to the CDCA Plan (BLM 1980a, as amended), and the 1988 Plan Amendments (BLM 1989). The Multiple-Use Class M designation is intended to control balance between higher intensity use and protection of public lands. Public lands designated as Class M are managed generally to provide for a wide variety or present and future uses such as mining, livestock grazing, recreation, energy, and utility development. Class M management is

also designed to conserve desert resources and to mitigate damage to those resources which permitted uses may cause.

The Energy Production and Utility Corridors Element of the CDCA Plan (BLM 1980a, as amended) recognizes the CDCA as an area where energy production facilities and utility corridors could be located. The element outlines BLM's management decisions for designation and implementation of a network of planning (utility) corridors to meet the projected utility needs through the year 2000 and siting procedures for power plants and alternative energy sources. A site-specific NEPA analysis is required for all applications for a ROW for any transmission line, regardless of whether the transmission line is in a corridor. In addition, implementation decisions outlined in the element indicate that an amendment to the CDCA Plan is required for all power generation facilities not specifically identified in the CDCA Plan.

Sixteen joint-use planning (utility) corridors varying in width from 2 to 5 miles are identified in the CDCA Plan, as amended. These corridors are intended to include new electrical transmission lines of 161 kV or above, all pipelines with diameters greater than 12 inches, and major aqueducts or canals for inter-basin transfers of water. According to the CDCA Plan, applications for utility ROWs will be encouraged to use designated corridors by BLM management.

Planning Criteria

Because solar power facilities and transmission lines are allowable uses of the proposed project and alternatives site as it is classified in the CDCA Plan, they would not conflict with the Plan. However, Chapter 3, "Energy Production and Utility Corridors Element" of the Plan also requires that sites associated with power generation and transmission not already identified in the Plan be considered through the Plan Amendment process. According to guidance issued by the BLM California Desert District in 2008 (in response to IM No. 2007-097), an amendment to the CDCA Plan is required for authorization of all power generation facility ROW sited on BLM-administered public lands within the CDCA. The site for the solar facility is not currently identified within the Plan; therefore, Plan Amendment is required to include that site as a recognized solar generation location within the planning boundary. Approval of this power generation site would result in an amendment to the Energy Production and Utility Corridors Element. The specific amendment, should a development action alternative be chosen, would state that the Desert Harvest Solar Project is allowed.

For transmission lines above 161 kV proposed outside a designated corridor, either the CDCA Plan could be amended to designate a new corridor or the CDCA Plan could be amended to 'allow' the transmission line outside a corridor. Portions of gen-tie line Alternatives B through E would not be within a currently designated corridor and a plan amendment would be required to allow the development of these gen-tie line alternatives. The specific amendment, should a gen-tie action alternative be chosen, would state that the Desert Harvest Solar 220 kV Gen-Tie is allowed outside a designated corridor.

The CDCA Plan planning criteria are the constraints and ground rules that guide and direct the development of the Plan Amendment. They ensure that the Plan Amendment is tailored to the identified issues and ensure that unnecessary data collection and analyses are avoided. As specified in Chapter 7, Plan Amendment Process, there are three categories of Plan Amendments, including:

- Category 1, for proposed changes that will not result in significant environmental impact or analysis through an Environmental Impact Statement;
- Category 2, for proposed changes that would require a significant change in the location or extent of a multiple-use class designation; and
- Category 3, to accommodate a request for a specific use or activity that will require analysis beyond the Plan Amendment Decision.

Based on these criteria, approval of the proposed project or action alternatives would require a Category 3 amendment. This chapter summarizes the procedures necessary to evaluate the proposed Plan Amendment, as well as the procedures required to perform the environmental review of the ROW application.

Statement of Plan Amendment

The Implementation section of the Energy Production and Utility Corridors Element of the CDCA Plan lists a number of Category 3 amendments that have been approved since adoption of the Plan in 1980. To be compliant with the CDCA Plan, Alternatives 4 through 7 would require the following amendment for the generation facility: "The Desert Harvest Solar Generation Project is allowed." To be compliant with the CDCA Plan, the following amendment would be required for the gen-tie line Alternatives B through E: "The 220 kV gen-tie line that serves the DSHP is 'allowed' outside of a designated corridor." The possibility of creating a corridor for the gen-tie line was also considered by the BLM for the gen-tie line alternatives. However, sufficient use of a corridor in this area is not expected to justify such a designation.

Plan Amendment Process

The Plan Amendment process is outlined in Chapter 7 of the Plan. In analyzing an applicant's request for amending or changing the Plan, the BLM State Director, California State Office, will:

- Determine if the request has been properly submitted and if any law or regulation prohibits granting the requested amendment.
- Determine if alternative locations within the CDCA are available which would meet the applicant's needs without requiring a change in the Plan's classification, or an amendment to any Plan element.
- Determine the environmental effects of granting and/or implementing the applicant's request.
- Consider the economic and social impacts of granting and/or implementing the applicant's request.
- Provide opportunities for and consideration of public comment on the proposed amendment, including input from the public and from federal, State, and local government agencies.
- Evaluate the effect of the proposed amendment on BLM management's desert-wide obligation to achieve and maintain a balance between resource use and resource protection.

Decision Criteria for Evaluation of Proposed Plan Amendment

The Decision Criteria to be used for approval or disapproval of the proposed amendment require that the following determinations be made by the BLM State Director:

- The proposed amendment is in accordance with applicable laws and regulations;
- The proposed amendment will provide for the immediate and future management, use, development, and protection of the public lands within the CDCA.

The BLM State Director will base the rationale for these determinations on the principles of multiple use, sustained yield, and maintenance of environmental quality as required in the FLPMA of 1976. Multiple use is defined as management of public lands and their resource values in a combination that best meets the needs of present and future Americans, using some land for less than all of the resources, taking into account balanced and diverse use with long-term needs, and coordinating management of various resources without permanent impairment of productivity and environmental quality considering the relative values of the resources. Sustained yield is defined as achievement and maintenance in perpetuity of a high level annual or regular periodic output of the various renewable resources of the public lands consistent with multiple use. In this context, the authorized officer will determine whether the Proposed Action comports with these FLPMA principles.

Decision Criteria for Evaluation of Application

In addition to defining the required analyses and Decision Criteria for Plan Amendments, the Plan also defines the Decision Criteria to be used to evaluate future applications in the Energy Production and Utility Corridors Element of Chapter 3. These Decision Criteria include:

- Minimize the number of separate rights-of-way by utilizing existing rights-of-way as a basis for planning corridors;
- Encourage joint-use of corridors for transmission lines, canals, pipelines, and cables;
- Provide alternative corridors to be considered during processing of applications;
- Avoid sensitive resources wherever possible;
- Conform to local plans whenever possible;
- Consider wilderness values and be consistent with final wilderness recommendations;
- Complete the delivery systems network;
- Consider ongoing projects for which decisions have been made; and
- Consider corridor networks which take into account power needs and alternative fuel resources.

Factors to be Considered

The Plan also states that, in the evaluation of proposed power plants, BLM will use the same factors affecting the public lands and their resources as those used by the Energy Commission. At the time the CDCA Plan was written, those factors included:

- Consistency with the Desert Plan,
- Protection of air quality,
- Impact on adjacent wilderness and sensitive resources,
- Visual quality,
- Fuel sources and delivery systems,
- Cooling-water sources,
- Waste disposal,

- Seismic hazards, and
- Regional equity.

These factors are now considered to include the environmental information requirements defined in the California Code of Regulations (CCR) Title 20, Appendix B, which include:

- General (Project Overview)
- Cultural Resources
- Land Use
- Noise
- Traffic and Transportation
- Visual Resources
- Socioeconomics
- Air Quality
- Public Health
- Hazardous Materials Handling
- Worker Safety
- Biological Resources
- Water Resources
- Soils
- Paleontological Resources
- Geological Hazards and Resources
- Transmission System Safety and Nuisance
- Facility Design
- Transmission System Design
- Reliability
- Efficiency

3.22.2 Determinations Required for the California Desert Conservation Area Plan

Required Determinations

The specific determinations required for the Plan Amendment evaluation are discussed in detail below in Table 3.22-1, Plan Amendment Determinations. This EIS acts as the mechanism for evaluating both the proposed project application, and the proposed Plan Amendment. The factors specified in CCR Title 20, Appendix B are included within the scope of the analysis presented in the EIS.

Table 3.22-1. Plan Amendment Determinations

Determinations	Conformance
Determine if the request has been properly submitted and if any law or regulation prohibits granting the requested amendment.	The Applicant's request for a right-of-way was properly submitted, and this EIS acts as the mechanism for evaluating and disclosing environmental impacts associated with that application. No law or regulation prohibits granting the amendment.
Determine if alternative locations within the CDCA are available which would meet the applicant's needs without requiring a change in the Plan's classification, or an amendment to any Plan element.	The CDCA Plan does not currently identify any available sites as solar generating facilities. Therefore, there is no other location on public land within the CDCA which could serve as an alternative location without requiring a Plan Amendment. The solar facility does not require a change in the Multiple-Use Class classification.
Determine the environmental effects of granting and/or implementing the applicant's request.	This EIS acts as the mechanism for evaluating the environmental effects of granting the right-of-way and the Plan Amendment.
Consider the economic and social impacts of granting and/or implementing the applicant's request.	This EIS acts as the mechanism for evaluating the economic and social impacts of granting the right-of-way and the Plan Amendment.

Table 3.22-1. Plan Amendment Determinations

Determinations	Conformance
Provide opportunities for and consideration of public comment on the proposed draft plan amendment, including input from the public and from federal, State, and local government agencies.	A Notice of Intent (NOI) to amend the CDCA Plan was published in the Federal Register September 15, 2011, Vol. 76, No. 179 Fed. Reg. 57073-57074. Public scoping meetings were held in October 2011 and public and agency comment opportunities are provided during the EIS process. A Notice of Availability for public and agency review was published on April 18, 2012, which initiated a 90-day public comment period for the Draft EIS and Draft Plan Amendment. The comment period from April 18, 2012 to July 17, 2012. Additionally, public hearings were held on May 14, 2012. A Notice of Availability for the Final EIS and proposed Plan Amendment will be published in the Federal Register which will initiate a 30-day protest period on the proposed PA to the Director of the BLM in accordance with 43 CFR 1610.5-2.
Evaluate the effect of the proposed amendment on BLM management's desert-wide obligation to achieve and maintain a balance between resource use and resource protection.	The balance between resource use and resource protection is evaluated within the EIS. Title VI of the FLPMA, under California Desert Conservation Area, provides for the immediate and future protection and administration of the public lands in the California desert within the framework of a program of multiple use and sustained yield, and maintenance of environmental quality. Multiple use includes the use of renewable energy resources, and through Title V of FLPMA, the BLM is authorized to grant rights-of-way for generation and transmission of electric energy. The acceptability of use of public lands within the CDCA for this purpose is recognized through the Plan's approval of solar generating facilities within Multiple-Use Class M. The purpose of the EIS is to identify resources which may be adversely impacted by approval of the proposed project, evaluate alternative actions which may accomplish the purpose and need with a lesser degree of resource impacts, and identify mitigation measures and Best Management Practices (BMPs) which, when implemented, would reduce the extent and magnitude of the impacts and provide a greater degree of resource protection.

Because solar electric facilities are allowed under Multiple-Use Class M designations, the DHSP is consistent with the CDCA multiple-use class designations and is not anticipated to require a plan amendment for reclassification of the project site for the solar facility. The gen-tie alternatives would also be located on Class M and Class L lands. Electrical transmission and distribution facilities may be allowed on Class M and Class L outside designated utility corridors after NEPA requirements are met and a plan amendment is approved. Gen-tie Alternatives B, C, D, and E are not within a utility corridor and require a plan amendment to allow a 220 kV transmission line outside of a designated utility corridor.

The CDCA Plan, as amended, states that the same criteria used for determining decisions within the CDCA Energy Production and Utility Corridors Element would also be used to evaluate applications for specific electrical ROW or power plant sites. The conformity of the Proposed Action with the CDCA Plan's Energy Production and Utility Corridors Element Decision Criteria is shown in Table 3.22-2, Conformity with the CDCA Area Plan's Energy Production and Utility Corridors Element Decision Criteria.

Table 3.22-2. Conformity with the CDCA Area Plan's Energy Production and Utility Corridors Element Decision Criteria

Decision Criteria	Compliance
Minimize the number of separate rights-of-way by utilizing existing rights-of-way as a basis for planning corridors	Although the Proposed Action will require a separate ROW, the intent of this element is somewhat met in that the action alternatives are in close proximity to the Desert Sunlight Solar Farm project and its associated linear facilities, which would allow better planning.
Encourage joint-use of corridors for transmission lines, canals, pipelines, and cables	Placement of the Proposed Action adjacent to existing facilities and proposing a joint use of the Desert Sunlight transmission towers or ROW somewhat meets the intend of this element. Although the proposed project is not within a designated corridor joint use was encouraged in the alternatives development for the EIS. One gen-tie line alternative would be collocated on poles on an "allowed" transmission line and one gen-tie line alternative would parallel an "allowed transmission line".
Provide alternative corridors to be considered during processing of applications	Alternative site locations were considered during the planning process and are discussed in Chapter 2, Description of the Proposed Action and Alternatives. No designated corridor is available for the gen-tie line alternatives from the generation site to the substation. One gen-tie line alternative would be collocated on poles on an "allowed" transmission line.
Avoid sensitive resources wherever possible	The extent to which the Proposed Action has been located and designed to avoid sensitive resources is addressed throughout the EIS. BLM and other federal regulations that restrict the placement of proposed facilities, such as the presence of designated Wilderness Areas or Desert Wildlife Management Areas were considerations in the original siting process used by the Applicant and discussed with BLM during pre-application proceedings (43 CFR 2804.10) to identify potential project locations. The proposed project location and configurations of the boundaries were modified in consideration of sensitive resources.
Conform to local plans whenever possible	The extent to which the Proposed Action conforms to local plans is addressed within the Land Use chapter of the EIS. The Proposed Action is in conformance with the Riverside County General Plan.
Consider wilderness values and be consistent with final wilderness recommendations	The Proposed Action is not located within a designated Wilderness Area or Wilderness Study Area. Wilderness characteristics of the proposed project and alternatives sites are evaluated in the EIS for example in Section 4.17, Special Designations, and in Section 4.19, Visual Resources.
Complete the delivery systems network	This decision criterion is not applicable to the Proposed Action.
Consider ongoing projects for which decisions have been made	This decision criterion is not applicable to the Proposed Action. Approval of the proposed project would not affect any other projects for which decisions have been made.
Consider corridor networks which take into account power needs and alternative fuel resources	This decision criterion is not applicable to the Proposed Action. The Proposed Action does not involve the consideration of an addition to or modification of the corridor network. However, it does utilize existing facilities, which were designed with consideration of both power needs and locations of alternative fuel resources.

Regulatory Requirements

Section 202 of FLPMA states: "The Secretary shall, with public involvement . . . develop, maintain, and when appropriate, revise land use plans which provide by tracts or areas for the use of the public lands" (43 United States Code [USC] 1712). The regulations for making and modifying land use plans and planning decisions are found in Title 43 of the CFR Part 1600.

The proposed land use plan amendment is to follow the regulations as set forth in Title 43 CFR Part 1610, Resource Management Planning, which requires that an interdisciplinary approach be taken in amending resource management plans (RMPs), where the disciplines of the preparers shall be appropriate to the values involved and the issues identified for the amendment. The amendment is to be analyzed through the NEPA process, in which the public and federal, state, and local governments are to be provided opportunities to meaningfully participate in and comment on the preparation of the amendment and be given early notice of planning activities.

The analysis and public involvement for the land use plan amendment coincides, to the extent possible, with the public notices, hearings, and comment periods of the EIS. The land use plan amendment and identification of major issues are discussed and analyzed within the technical resource chapters of this EIS. Potential effects and mitigation measures resulting from the land use plan amendment, if required, are evaluated and discussed relevant to each technical resource area.

The Record of Decision will address the EIS, including both the land use plan amendment under the BLM planning regulations, and the project under the BLM ROW regulations and NEPA.

Because the Draft EIS also evaluated a BLM draft land use plan amendment, the public review period lasted 90 days from the date the Notice of Availability of the draft EIS was published in the Federal Register (43 CFR 1610.2) by the EPA. The proposed revisions to the CDCA Plan (as outlined in Chapter 7 of the CDCA Plan, as amended) and of the necessary ROW required for the project would be approved by a decision maker at the level of the California State Director, or higher.

The planning regulations include an opportunity for protest (43 CFR 1610.5-2). The protest period extends 30 days from the date that the Environmental Protection Agency publishes the Notice of Availability of the final EIS containing the proposed plan amendments in the Federal Register. A letter of protest must be filed with the BLM Director within 30 days of the EPA notice. The Director may dismiss or uphold a protest, in whole or in part. The BLM will withhold approval and implementation on any protested portion of a plan amendment until the protest process has been completed. Portions of the plan amendment not being protested may be approved and implemented.

EPA's notice simultaneously initiates the Governor's consistency review. The Governor has a maximum of 60 days to identify inconsistencies between the proposed plan and state and local plans and provide written comments to the BLM California State Director. The BLM and the state may mutually agree upon a shorter review period satisfactory to both parties.

Once protests have been resolved and the Governor's consistency review has been completed, the BLM State Director may approve the plan amendment and/or the Proposed Action or one of its alternatives. These decisions, if signed by a decision maker in the Department of the Interior, are the final decision of the U.S. Department of the Interior and cannot be appealed to the

Interior Board of Land Appeals. If the decision is signed by a decision maker at the BLM then the implementation decisions (non-plan amendment) may be appealed to the Interior Board of Land Appeals.

CHAPTER 4 – ENVIRONMENTAL CONSEQUENCES

4.1 INTRODUCTION AND OVERVIEW

This chapter assesses environmental consequences or impacts that would result from the implementation of the proposed project or the alternatives described in Chapter 2. These analyses consider direct, indirect, and cumulative impacts of the proposed project and alternatives, including both short-term impacts during construction and decommissioning, and long-term impacts during operations. This chapter also identifies mitigation measures (MM) to address adverse impacts and summarizes the residual and unavoidable adverse impacts on a resource-by-resource basis. The scope of the impact analyses presented in this chapter is commensurate with the level of detail for the alternatives provided in Chapter 2, Proposed Action and Alternatives, and the availability and/or quality of data necessary to assess impacts. Baseline conditions for assessing the potential environmental impacts are described in Chapter 3.

4.1.1 Methodology

The methodology for this assessment conforms with the guidance found in the following sections of the Council on Environmental Quality (CEQ) regulations for implementing the National Environmental Policy Act (NEPA): 40 Code of Federal Regulation (CFR) Section 1502.24, Methodology and Scientific Accuracy; 40 CFR Section 1508.7, Cumulative Impact; and 40 CFR Section 1508.8, Effects. The CEQ regulations require agencies to "rigorously explore and objectively evaluate" the impacts of the alternatives.

As discussed in Chapter 1, the project is subject to environmental review under the NEPA. Because this project will require close cooperation with Riverside County, this EIS was written to comply with NEPA and to satisfy CEQA requirements for those project components that require entitlements from state and local agencies, in accordance with CEQA Guidelines, Public Resources Code Section 21000 et seq., including the Guidelines for Implementation of the CEQA, Title 14 California Code of Regulations section 15000 et seq. CEQA considerations including CEQA Significance Criteria, based on the significance criteria listed in the CEQA Environmental Checklist, Appendix G of the CEQA Guidelines, and CEQA Significance Determination have been included at the end each Section as required. There is no requirement that Federal agencies determine significance when analyzing impacts in an EIS; rather, the BLM must take a "hard look" at the impacts of the proposed project and its alternatives and determine whether they are adverse. Therefore, any determination of significance in this document is a determination under CEQA, not NEPA.

In addition, because certain aspects of the project description are not narrowly defined at this stage of project development and a range of potential configurations exist (e.g., types of panels that will ultimately be selected and procured, location of the operations and maintenance building, exact placement of transmission poles, and other details), a conservative scenario of environmental effects for each resource is evaluated throughout this chapter. This approach serves to ensure an estimate that is unlikely to be exceeded of adverse environmental effects for the proposed project and alternatives, as actual project effects may be somewhat reduced upon final engineering and configuration of the DHSP.

Effects on Joshua Tree National Park are evaluated throughout this chapter and are also compiled into a single section, Section 4.17, Special Designations, for ease of evaluation of effects on the Park.

4.1.2 Types of Effects

The potential impacts from those actions that would have direct, indirect, and cumulative effects were considered for each resource. The terms "effect" and "impact" as used in this document are synonymous and could be beneficial or detrimental.

Direct effects are caused by the action and occur at the same time and place as the action; indirect effects are caused by the action and occur later in time or further in distance, but are still reasonably foreseeable (40 CFR 1508.8). Cumulative impacts are those effects resulting from the incremental impacts of an action when combined with other past, present, and reasonably foreseeable future actions (regardless of which agency or person undertakes such actions) (40 CFR 1508.7). Cumulative impacts could result from individually insignificant but collectively significant actions taking place over a period of time. Short-term impacts occur only for a short time after implementation of a management action; for example, construction noise impacts from construction activities would be considered short term in nature. By contrast, long-term effects occur for an extended period after implementation of a management action; for example, operational noise during facility operations would be a long-term impact, as it would last for as long as the facility is in operation.

As required by Section 102(2)(C) of NEPA, this chapter includes the environmental impacts of each of the alternatives, including any adverse environmental effects which cannot be avoided, the relationship between short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and any irreversible or irretrievable commitments of resources which would be involved in the proposal should it be implemented. This Chapter uses section 1502.16 of the CEQ regulations as the scientific and analytic basis for the comparisons of alternatives.

4.1.3 Mitigation Measures Included in the Analysis

Section 1508.20 of the CEQ regulations for implementing NEPA defines mitigation as:

(a) Avoiding the impact altogether by not taking a certain action or parts of an action;

(b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation;

(c) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;

(d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and

(e) Compensating for the impact by replacing or providing substitute resources or environments.

For impacts identified in the following resource sections, mitigation measures have been developed that would be implemented during all appropriate phases of the project from initial ground breaking to operations, and through closure and decommissioning. The mitigation measures include a combination of the following:

- Applicant Measures (AMs) that have been proposed by the Applicant, which are reflected as design features of the proposed project and alternatives;
- Regulatory requirements of other federal, State, and local agencies; and
- Additional BLM-proposed mitigation measures, standard ROW grant terms and conditions, and best management practices (BMPs).

These requirements are generically referred to as "mitigation measures" throughout this EIS. Because these mitigation measures are derived from a variety of sources, many also are required, and their implementation regulated, by the various agencies.

Many of the mitigation measures are required by agencies other than the BLM, and while their implementation will be enforced by those other agencies, the BLM will incorporate compliance with those requirements as part of its approval for the Proposed Action. For instance, any Endangered Species Act (ESA) Section 7 mitigation measures of the USFWS will be included in the Record of Decision (ROD). Similarly, the National Historic Preservation Act (NHPA) Section 106 mitigation measures will also be included in the ROD. The Applicant will be required by the ROD and the ROW grant to comply with the requirements of those other agencies (43 CFR 2805.12(a) and (i)(6)). Any non-compliance with implementation of these other federal or State requirements may affect the approval status of the ROD and ROW grant.

In some instances, the BLM identified potential impacts to public land resources that would not otherwise be the subject of mitigation measures required by these other agencies. In these instances, individual mitigation measures have been developed by the BLM for the proposed project and alternatives. If a ROW is granted, these mitigation measures will be incorporated, as applicable, into the ROW grant and, if so, will be monitored and managed by the BLM. In addition, standard terms and conditions for approval of the use of public land will be identified in the ROD and incorporated into the proposed ROW grant and therefore will be enforced by the BLM as part of any ROW grant approved for the project.

4.1.4 Cumulative Scenario Approach

This EIS analyzes the cumulative impact of the construction, operation and maintenance, closure and decommissioning of the elements of the proposed project and alternatives, taking into account the effects in common with other past, present, and reasonably foreseeable future actions. The cumulative effects analysis highlights past actions that are closely related either in time or space (i.e., temporally or in geographic proximity) to the proposed project, present actions that are ongoing at the same time this EIS was being prepared; and reasonably foreseeable future actions, including those for which there are existing decisions, funding, formal proposals, or which are highly probable, based on known opportunities or trends.

The intensity, or severity, of the cumulative impacts analysis considers the magnitude, geographic extent, duration, and frequency of the effects (CEQ 1997). The magnitude of the effect reflects the relative size or amount of the effect; the geographic extent considers how widespread the effect may be; and the duration and frequency refer to whether the effect is a one-time event, intermittent, or chronic (CEQ 1997). Varying degrees of information exist about projects within the cumulative scenario. Therefore, for resource areas where quantitative information was available, a quantitative analysis is provided; otherwise, a qualitative analysis is provided. If the

proposed project and alternatives would have no direct or indirect effects on a resource, the EIS does not analyze potential cumulative effects on that resource.

Tables 4.1-1 and 4.1-2 (located at the end of this section) provide a comprehensive listing of all existing and foreseeable projects that could contribute to a cumulative impact on the environment. Projects listed include renewable energy projects located on BLM-administered lands and/or private lands and identified in the BLM First-in-Line Pending Solar Applications: California, other BLM actions/activities identified on the BLM website or Geocommunicator website, and projects identified by local governments, such as Riverside County and the Energy Commission. Tables 4.1-1 and 4.1-2 present the project name and owner, location, type, status, total acres, and a brief description of each project, to the extent available. Most of the projects listed in Table 4.1-1 have been, are being, or would be required to undergo their own independent environmental review under NEPA, CEQA, or both, as applicable. Figure 4.1-1 shows the location of each of the projects listed in Table 4.1-1 using a corresponding identification number. Those projects where the identification number shown as an asterisk (*) are outside the area covered by Figure 4.1-1.

For the proposed project, the cumulative scenario for each issue area includes all or a subsection of the projects identified in Table 4.1-1 and 4.1-2. Table 4.1-3 identifies each resource's cumulative analysis geographic extent, the known or reasonably foreseeable actions within the geographic extent, and potential cumulative effects.

With the exception of climate change, which is a global issue, the BLM has identified the California Desert District as the largest area within which cumulative effects should be assessed. However, the specific area of cumulative effect varies by resource. For each resource, the geographic scope of analysis is based on the natural boundaries of the resource affected, rather than jurisdictional boundaries, as appropriate. The geographic scope of cumulative effects often extends beyond the scope of the direct effects, but not beyond the scope of the direct and indirect effects of the proposed project and alternatives. Table 4.1-2 identifies the relevant geographic scope for each discipline's analysis of cumulative impacts.

In addition, each project in a region would have its own implementation schedule, which may or may not coincide or overlap with the proposed project's schedule. This is a consideration for short-term impacts from the project. However, to be conservative, the cumulative analysis assumes that all projects in the cumulative scenario are built and operating during the operating lifetime of the proposed project and alternatives.

Renewable Energy Projects Included in the Cumulative Scenario

A large number of renewable energy projects have been proposed on BLM-administered land, State land, and private land in California. As of July 2012, there were 279 renewable projects totaling 26,000 MW proposed in California in various stages of the environmental review process or under construction (CEC 2011).

Large renewable projects now described in applications to the BLM and on private land are competing for utility Power Purchase Agreements, which will allow utilities to meet State-required Renewable Portfolio Standards. Not all of the projects listed will complete the environmental review process, and not all projects will be funded and constructed. It is unlikely that all of these projects will be constructed for the following reasons:

- Not all developers will develop the detailed information necessary to meet BLM standards. Preparing complete and detailed plans of development (POD) is difficult, and completing the required NEPA and CEQA documents is time-consuming and costly.
- As part of approval by the appropriate Lead Agency under NEPA and/or CEQA (generally the BLM and/or local jurisdiction), all regulatory permits must be obtained by the applicant or the prescriptions required by the regulatory authorities incorporated into the Lead Agency's license, permit or ROW grant. The large size of these projects may result in permitting challenges related to endangered species, mitigation measures or requirements, and other issues.
- Also after project approval, construction financing must be obtained (if it has not been obtained earlier in the process). The availability of financing will be dependent on the status of competing projects, the laws and regulations related to renewable project investment, and the time required for obtaining permits for individual projects.

While it is acknowledged that a portion of the renewable projects listed in Table 4.1-2 may not get funded or built, the EIS did not eliminate any of the renewable projects listed in the BLM First-in-Line Pending Solar Applications: California or those identified by the Energy Commission Renewable Energy Action Team unless the project had been formally rejected by the BLM. The EIS did not consider an actual wind farm at the Eagle Mountain Wind Project foreseeable because the feasibility of a wind project at the location has not been demonstrated. As such, only the Met Towers were included in the cumulative scenario.

Table 4.1-1. Existing Projects Along The I-10 Corridor (Eastern Riverside County)

ID on Figure 4.1-1	Project Name; Agency ID	Location	Ownership	Status	Acres	Project Description
1	Interstate 10	Linear interstate highway running from Santa Monica to Blythe (in California)	Caltrans	Existing	N/A	Interstate 10 (I-10) is a major east-west route for trucks delivering goods to and from California. It is a four-lane divided highway in the project region.
2	Chuckwalla Valley State Prison	19025 Wiley's Well Rd. Blythe, CA	CA Dept. of Corrections & Rehabilitation	Existing	1,080	State prison providing long-term housing and services for male felons classified as medium and low-medium custody inmates jointly located on 1,720 acres of state-owned property. APN 879040006, 008, 012, 027, 028, 029, 030
3	Ironwood State Prison	19005 Wiley's Well Rd. Blythe, CA	CA Dept. of Corrections & Rehabilitation	Existing	640	ISP jointly occupies with Chuckwalla Valley State Prison 1,720 acres of state-owned property, of which ISP encompasses 640 acres. The prison complex occupies approximately 350 acres with the remaining acreage used for erosion control, drainage ditches, and catch basins. APNs 879-040-001, 004, 009, 010, 011, 015, 016, 017, 018, 019, 020
4	Devers-Palo Verde No. 1 Transmission Line	From Palo Verde (Arizona) to Devers Substation	SCE	Existing	N/A	Existing 500 kV transmission line parallel to I-10 from Arizona to the SCE Devers Substation, near Palm Springs. DPV1 will loop into the approved Midpoint Substation (now called Colorado River Substation), which will be located 10 miles southwest of Blythe.
5	Blythe Energy Project	City of Blythe, north of I-10, 7 miles west of the CA/AZ border	Blythe Energy, LLC	Existing	76	520 MW combined-cycle natural gas-fired electric-generating facility. Project is connected to the Buck Substation owned by WAPA.
6	West-wide Section 368 Energy Corridors	Riverside County, parallel to DPV corridor	BLM, DOE, U.S. Forest Service	Approved by BLM and U.S. Forest Service	N/A	Designation of corridors on federal land in the 11 western states, including California, for oil, gas, and hydrogen pipelines and electricity transmission and distribution facilities (energy corridors). One of the corridors runs along the southern portion of Riverside County.
7	Eagle Mountain Pumping Plant	Eagle Mountain Road, west of Desert Center	Metropolitan Water District of Southern California	Existing		144-foot pumping plant that is part of the Metropolitan Water District of Southern California's facilities. APNs 807-150-007, 807-150-009, 807-150-010

Table 4.1-1. Existing Projects Along The I-10 Corridor (Eastern Riverside County)

ID on Figure 4.1-1	Project Name; Agency ID	Location	Ownership	Status	Acres	Project Description
8	Recreational Opportunities	Eastern Riverside County	BLM	Existing	N/A	BLM has numerous recreational opportunities on lands in eastern Riverside County along the I-10 corridor including the Corn Spring's Campground, Wiley's Well Campground, Coon Hollow Campground, and Midland Long-Term Visitor Area.
9	Kaiser Mine	Eagle Mountain, north of Desert Center	Kaiser Ventures, Inc.	Existing	N/A	Kaiser Steel mined iron ore at Kaiser Mine in Eagle Mountain and provided much of the Pacific Coast steel in the 1950s. Mining project also included the Eagle Mountain Railroad, 51 miles long. Imported steel captured market share in the 1960s and 1970s and primary steelmaking closed in the 1980s. 701380031
10	Blythe Energy Project Transmission Line	From the Blythe Energy Project (Blythe, CA) to Julian Hinds Substation	Blythe Energy, LLC	Existing	N/A	Transmission line modifications including upgrades to Buck Substation, approximately 67.4 miles of new 230 kV transmission line between Buck Substation and Julian Hinds Substation, upgrades to the Julian Hinds Substation, installation of 6.7 miles of new 230 kV transmission line between Buck Substation and SCE's DPV 500 kV transmission line.
11	Blythe PV Project	Blythe	First Solar	Existing, CPUC approved project terms of a 20-year power purchase agreement for sale of 21 MW	200	21 MW solar photovoltaic project located on 200 acres. Project was constructed by First Solar and sold to NRG Energy.
12	Chuckwalla Valley Raceway	Desert Center Airport (no longer a community airport)	Developer Matt Johnson	Approved by County of Riverside	400	A 5.8-mile race track located on 400 acres of land that used to belong to Riverside County and was used as the Desert Center Airport. APNs 811-142-016, 811-142-006. Small private airstrip kept as part of project. Construction completed in March 2010.
13	SMP00199	Approximately 4 miles north of Blythe on Midland Road	Shepwells	Active mine[1]		Surface Mining Permit for Sand and Gravel. 6 acres disturbed as of 2011. Mine ID: 91-33-0080
14	SMP00102	10 Miles W of Midland Rd. & 17 Miles N of Blythe	Pacific Gypsum Products	Active mine[1]		Surface Mining Permit for Standard Gypsum Mine. 17 acres disturbed as of 2010. Mine ID: 91-33-0076

Table 4.1-2. Foreseeable Projects along the I-10 Corridor (Eastern Riverside County)

ID on Figure 4.1-1	Project Name; Agency ID	Location	Ownership	Status	Acres	Project Description
A	Four Commercial Projects	Blythe, CA	Various	Approved	N/A	Four commercial projects have been approved by the Blythe Planning Department including the Agate Road Boat & RV Storage, Riverway Ranch Specific Plan, Subway Restaurant and Motel, and Agate Senior Housing Development.
B	Intake Shell	Blythe, CA		Under Construction	N/A	Reconstruction of a Shell facility located at Intake & Hobson Way. Demolition occurred in 2008, reconstruction planned for 2009-2010.
C	Fifteen residential developments	Blythe, CA	Various	Approved or Under Construction	N/A	Twelve residential development projects have been approved by the Blythe Planning Department including: Vista Palo Verde (83 Single Family Residential [SFR]), Van Weelden (184 SFR), Sonora South (43 SFR), Ranchette Estates (20 SFR), Irvine Assets (107 SFR), Chanslor Village (79 SFR), St. Joseph's Investments (69 SFR), Edgewater Lane (SFR), The Chanslor Place Phase IV (57 SFR), Cottonwood Meadows (103 Attached SFR), Palo Verde Oasis Phase IV (29 SFR). Three residential development projects have been approved and are under construction including: The Chanslor Phase II & III (78 SFR), River Estate at Hidden Beaches, Mesa Bluffs Villas (26 Attached SFR).
D	Devers-Palo Verde No. 2 Transmission Line Project	From the Midpoint Substation to Devers Substation (CA-only portion)	SCE	CPUC Petition to Modify Request to construct CA-only portion was approved by CPUC 11/2009. DPV2 to Arizona was originally approved by CPUC in 6/2007. BLM ROD was issued July, 2011.	N/A	New 500 kV transmission line parallel to the existing Devers-Palo Verde Transmission Line from Midpoint Substation, approximately 10 miles southwest of Blythe, to the SCE Devers Substation, near Palm Springs. The ROW for the 500 kV transmission line would be adjacent to the existing DPV ROW and would require an additional 130 feet of ROW on federal and State land and at least 130 feet of ROW on private land and Indian Reservation land.

Table 4.1-2. Foreseeable Projects along the I-10 Corridor (Eastern Riverside County)

ID on Figure 4.1-1	Project Name; Agency ID	Location	Ownership	Status	Acres	Project Description
E	Colorado River Substation Expansion	10 miles southwest of Blythe	SCE	Approved by CPUC 11/2009. Application for expansion filed with CPUC in 11/2010. Project was approved July, 2011.	44	The substation was approved by the CPUC (as the "Midpoint Substation") but is proposed to be expanded as a 500/230 kV substation and would be constructed in an area approximately 1,000 feet by 1,900 feet, permanently disturbing approximately 90 acres. The 500 kV switching station would include buses, circuit breakers, and disconnect switches. The switchyard would be equipped with 108-foot-high dead-end structures. Outdoor night lighting would be designed to illuminate the switchrack when manually switched on. The Final Supplemental EIR was published by the CPUC in April 2011.
F	Desert Southwest Transmission Line	118 miles primarily parallel to DPV	Imperial Irrigation District	Final EIR/EIS prepared in 2005. Approved by the BLM in 2006.	N/A	New, approximately 118-mile 500 kV transmission line from a new substation/switching station near the Blythe Energy Project to the existing Devers Substation located approximately 10 miles north of Palm Springs, California.
G	Blythe Energy Project II	Blythe, CA. Near the Blythe Airport and I-10	Blythe Energy, LLC	Approved by CEC in December 2005	30 acres (located on Blythe Energy Project land)	520 MW combined-cycle power plant located entirely within the Blythe Energy Project site boundary. Blythe Energy Project II will interconnect with the Buck Substation constructed by WAPA as part of the Blythe Energy Project. Project is designed on 30 acres of a 76-acre site.
H	Eagle Mountain Pumped Storage Project	Eagle Mountain iron ore mine, north of Desert Center	Eagle Crest Energy Company	License application filed with FERC in June 2009. EIR published in mid- 2010; FERC Final EIS published in January 2012.	2,221	1,300 MW pumped storage project designed to store off-peak energy to use during peak hours. The captured off-peak energy would be used to pump water to an upper reservoir. When the water is released to a lower reservoir through an underground electrical generating facility the stored energy would be added into the Southwestern grid during "high demand peak" times, primarily weekdays. Estimated water use is 8,100 AFY for the first four-year start-up period and replacement water is 1,763 AFY thereafter.
I	Palen Solar Energy Project	North of I-10, 10 miles east of Desert Center	Solar Millennium LLC/Chevron Energy	Approved by CEC in December 2010. Final EIS published in May 2011.	5,200	500 MW solar trough project on 5,200 acres. Facility would consist of two 250 MW plants disturbing approximately 3,870 acres. Project would include interconnection to the SCE Red Bluff Substation. Project would use an estimated 300 AFY of water.

Table 4.1-2. Foreseeable Projects along the I-10 Corridor (Eastern Riverside County)

ID on Figure 4.1-1	Project Name; Agency ID	Location	Ownership	Status	Acres	Project Description
J	Blythe Solar Power Project	North of I-10, immediately north of the Blythe Airport	Solar Millennium LLC/Chevron Energy	Approved by CEC and BLM in 2010; under construction.	7,540	1,000 MW solar trough facility on 7,540 acres. On August 18, 2011, Palo Verde Solar I, LLC, through Solar Trust of America, announced their intent to change the solar technology from concentrated solar power (CSP) to photovoltaic (PV). BLM ordered a temporary suspension of all surface disturbing construction and requested that the applicant file an amended SF299 form to request the change in the project. Once such request is processed, BLM may lift the suspension.
K	McCoy Soleil Project	10 miles northwest of Blythe	EDF	Plan of Development in to Palm Springs BLM.	1,959	300 MW solar power tower project located on 1,959 acres. Project would require a 14-mile transmission line to proposed SCE Colorado Substation south of I-10. Would use 575-600 AFY of water.
L	NextEra (FPL) McCoy	13 miles northwest of Blythe, CA,	McCoy Solar, LLC (NextEra FPL)	Draft EIS published May 2012	8,177	Up to 750 MW solar PV project on 7,700 acres of BLM land, 477 acres of private land. The project would require a 16-mile gen-tie, with a right-of-way width of 100 feet, which will require about 200 acres of public and private lands. The proposed 20-acre switch yard will be located adjacent to and connect into Southern California Edison's Colorado River Substation.
M	Genesis Solar Energy Project	North of I-10, 25 miles west of Blythe and 27 miles east of Desert Center	NextEra (FPL)	Approved by CEC and BLM in 2010; under construction	1,950	250 MW solar trough project on 1,950 acres north of the Ford Dry Lake. Project includes six-mile natural gas pipeline and a 5.5-mile gen-tie line to the Blythe Energy Center to Julian Hinds Transmission Line, then travel east on shared transmission poles to the Colorado River Substation.
N	Silverado Power I, II, III	West of SR177, North of I-10	Silverado Power, LLC	Under EDA review	2,680	Three solar PV projects.
O	Rice Solar Energy Project	Rice Valley, Eastern Riverside County	Rice Solar Energy, LLC (Solar Reserve, LLC)	Approved by CEC; Final EIS published in August 2011; construction to begin in 2011	1,410	150 MW solar power tower project with liquid salt storage. Project is located on approximately 1,410 acres and includes a power tower approximately 650 feet tall and a 10-mile long interconnection with the WAPA Parker-Blythe transmission line.
P	Blythe Airport Solar I Project (U.S. Solar Holdings)	Blythe Airport	County of Riverside	City of Blythe approved the project in November, 2009, Approved by the County of Riverside in 2010	640	100 MW solar photovoltaic project located on 640 acres of Blythe airport land.

Table 4.1-2. Foreseeable Projects along the I-10 Corridor (Eastern Riverside County)

ID on Figure 4.1-1	Project Name; Agency ID	Location	Ownership	Status	Acres	Project Description
Q	Desert Quartzite	South of I-10, 8 miles southwest of Blythe	First Solar (previously OptiSolar)	POD in to BLM	7,724	600 MW solar photovoltaic project located on 7,724 acres. Adjacent to DPV transmission line and SCE Colorado Substation. Approximately 27 AF of water would be used during construction and 3.8 AFY during operation.
R	Desert Sunlight Project	6 miles north of Desert Center	First Solar	Project approved in August 2011.	4,144	550 MW photovoltaic project on 4,144 acres of BLM land. Would require a 12-mile transmission line to planned Red Bluff Substation.
S	SCE Red Bluff Substation	South of I-10 at Desert Center	SCE	Project approved in July, 2011.	90	A proposed new 500/220 kilovolt (kV) substation, two new parallel 500 kV transmission lines of about 2,500 to 3,500 feet each to loop the substation into the existing Devers-Palo Verde (DPV) 500 kV transmission line (DVPV1), and two parallel 500 kV transmission lines of about 2,500 to 3,500 feet each to loop the new substation into the proposed Devers-Colorado River 500 kV transmission line (DPV2) into the new substation with another two parallel lines of about 2,500 to 3,500 feet each.
T	Desert Center 50	Desert Center	U.S. Solar Holdings	Under Review by County of Riverside	452	A planned 49.5 MW fixed flat panel photovoltaic solar power plant on APN: 810-190-004; 811-231-001, 003, 004 and 008; 810-110-001 and 006
U	Sol Orchard	Desert Center	Sol Orchard	Approved by County of Riverside in 2010	10	A planned 1.5 MW fixed flat panel photovoltaic solar power plant north of I-10, east of SR177, west of Desert Center Airport.
V	Blythe Mesa Solar I Blythe Mesa Solar II	Blythe, CA	Renewable Resources Group	Under Review by County of Riverside.	3,700 + 3,250	Solar I is a planned 485 MW solar PV project and Solar II is a planned 486-acre solar PV project on private land in Blythe, California
W	Blythe Solar Power Generation Station 1, LLC	Blythe, CA	Southwestern Solar Power, LLC (Amonix, Inc.)	Approved. Estimated online date 6/2013	29.4	A planned 4.76 MW solar PV facility. The proposal includes the construction of sixty-nine PV panels that stand approximately 50 feet tall and 72 feet wide, a 200-square-foot equipment building, and a twenty foot perimeter fire access road. – APN: 812-340-002

Table 4.1-2. Foreseeable Projects along the I-10 Corridor (Eastern Riverside County)

ID on Figure 4.1-1	Project Name; Agency ID	Location	Ownership	Status	Acres	Project Description
X	Eagle Mountain Landfill Project	Eagle Mountain, North of Desert Center	Mine Reclamation Corporation and Kaiser Eagle Mountain, Inc.	U.S. Court of Appeals for the Ninth Circuit issued its opinion regarding the EIS for the project in 11/09 and ruled that the land exchange for the project was not properly approved by the administrative agency. Kaiser's Mine and Reclamation is considering all available options.	~ 3,500	The project proposed to be developed on a portion of the Kaiser Eagle Mountain Mine in Riverside County, California. The proposed project comprises a Class III nonhazardous municipal solid waste landfill and the renovation and repopulation of Eagle Mountain Townsite. The proposal by the proponent includes a land exchange and application for rights-of-way with the Bureau of Land Management and a Specific Plan, General Plan Amendment, Change of Zone, Development Agreement, Revised Permit to Reclamation Plan, and Tentative Tract Map with the County. The Eagle Mountain landfill project proposes to accept up to 20,000 tons of non-hazardous solid waste per day for 50 years.
Y	Wiley's Well Communication Tower (part of the Public Safety Enterprise Communication System)	East of Wiley's Well Road, just south of I-10	Riverside County	Final EIR for the Public Safety Enterprise Communication System published in August 2008.	N/A	The Public Safety Enterprise Communication project is the expansion of Riverside County's fire and law enforcement agencies approximately 20 communication sites to provide voice and data transmission capabilities to personnel in the field.
Z	Eagle Mountain Wind Project Met Towers	South of Eagle Mountain, north of Joshua Tree National Park	LH Renewable LLC	Application for wind testing pending	3,500	Met towers for wind testing. Wind development project is not foreseeable at this time as the feasibility of a wind project at this location has not been demonstrated.
AA	Rio Mesa Solar Electric Generating Facility	13 miles southwest of Blythe	Rio Mesa Solar I, II, III LLC (BrightSource)	Application Filed with Energy Commission October, 2011	5,750 acres	Three 250-megawatt (MW) (nominal) solar concentration thermal power plants. Each plant will utilize a solar power boiler, located on top of a concrete tower (approximately 750-feet tall), surrounded by heliostat (mirror) fields (approximately 85,000 per plant) which focus solar energy on the boiler. Auxiliary boilers will be used to operate in parallel with the solar field during partial load conditions and when additional power is needed.
BB	Gestamp Asetym Solar -- FTA 2011-06 EDA	Northwest of Blythe	Gestamp Asetym Solar	Under EDA review.	320	37 MW solar power plant.

Table 4.1-2. Foreseeable Projects along the I-10 Corridor (Eastern Riverside County)

ID on Figure 4.1-1	Project Name; Agency ID	Location	Ownership	Status	Acres	Project Description
CC	Gypsum Solar; CACA 051950	Approximately 7 miles north of Blythe, CA	Ridgeline Energy LLC	BLM application pending. Application date March, 2010.	3,000	50-100 MW solar PV or concentrated PV energy facility. The project would include a solar panel array, a maintenance building, an administration building, a raw water storage tank, a demineralized water tank, a potable water tank, and a 230 kV or lower transmission line and substation.
DD	CUP03677	East of Blythe Solar Project, South of Gypsum Solar project.	N/A	Conditional Use Permit applied for September, 2011.	N/A	500 MW solar PV generating facility.
Additional Projects Outside Cumulative Figure Boundaries						
EE	Solar Power Inc.	Palm Springs Area	Wintec Energy	Approved by the County of Riverside in 2010	37	A planned 2.35 MW AC photovoltaic solar power generation system.
FF	Paradise Valley "New Town" Development	Approximately 30 miles west of Desert Center (7 miles east of the city of Coachella)	Glorious Land Company	Notice of Preparation (NOP) of an EIR published in December 2005. Still under environmental review.	6,397	Company proposes to develop a planned community as an international resort destination with residential, recreational, commercial, and institutional uses and facilities. The project is planned as a self-contained community with all public and quasi-public services provided. The project is located outside the Coachella Valley Water District (CVWD) boundaries and the applicant has entered into an agreement with the CVWD to manage artificial recharge of the Shaver's Valley groundwater. The proponent has purchased a firm water supply from Rosedale-Rio Bravo Water District in Kern County. In-kind water would be transferred to the MWD that would release water from the Colorado River Aqueduct to a 38-acre percolation pond on the project site. MWD would deliver approximately 10,000 AFY to the percolation pond and over the long term; no net loss of groundwater in storage is anticipated.

Table 4.1-2. Foreseeable Projects along the I-10 Corridor (Eastern Riverside County)

ID on Figure 4.1-1	Project Name; Agency ID	Location	Ownership	Status	Acres	Project Description
GG	Mecca Specific Plan	North of Salton Sea, east of community of Mecca, southeast of City of Coachella.	Mecca Group LLC	NOP of an EIR published in June 2008. Still under environmental review.	2,934	The proposed project includes 19,476 units with a mix of low-, medium- and high-density residential development. Non-residential uses include retail/commercial, mixed use, a golf course, and open space with civic uses and agricultural buffers. The Specific Plan incorporates existing residential, commercial, industrial, and civic uses with a blend of proposed low-, medium- and high-density residential and commercial land uses. The proposed General Plan Amendment and Change of Zone would be changed to Specific Plan and Specific Plan zoning.
HH	Proposed National Monument (former Catellus Lands)	Between Joshua Tree National Park and Mojave National Preserve		In December 2009, Senator Feinstein introduced bill S.2921 that would designate two new national monuments including the Mojave Trails National Monument.	941,000	The proposed Mojave Trails National Monument would protect approximately 941,000 acres of federal land, including approximately 266,000 acres of the former railroad lands along historic Route 66. The BLM would be given the authority to conserve the monument lands and also to maintain existing recreational uses, including hunting, vehicular travel on open roads and trails, camping, horseback riding and rockhounding.
II	BLM Solar Energy Zones (SEZs)	Along the I-10 corridor between Desert Center and Blythe	BLM	Proposed	202,896 (eastern Riverside County only)	The DOE and the BLM identified 24 tracts of land as Solar Energy Study Areas in the BLM and DOE Solar Programmatic Draft EIS, published in December 2010. These areas have been identified for in-depth study of solar development and may be found appropriate for designation as solar energy zones in the future.
JJ	CUP03602	South of Nicholls Warm Springs, approximately 8 miles west of Blythe.	N/A	CUP Approved in 2009	200	21 MW photovoltaic facility on 200 acres (Riverside County ALUC, 2008)
KK	Plot Plan No. 23885	Westerly of Ehlers Boulevard and northerly of Riverside Avenue	Calvary Chapel of Blythe	Approved	34.13	8,890-square-foot church with accessory outdoor amphitheatre/recreational area and ancillary parking and a detached 205-square-foot restroom building. Fourth Supervisorial District – Blythe Zoning District - Palo Verde Valley Area

Source: 1) Riverside County 2012.

Table 4.1-3. Cumulative Projects within the Geographic Scope of Cumulative Analysis for Each Resource Area

Resource Area/ BLM Program Area	Geographic Area of Consideration	Elements to Consider	Cumulative BLM Authorized and Other Known Projects/Actions/Activities
Air Resources	Six-mile radius around project site	VOC, NOx, CO, PM10, and PM2.5	• Eagle Mountain Pumping Plant (7) • Eagle Mountain Pumped Storage Project (H) • Desert Sunlight Solar Farm Project (R) • Sol Orchard Solar Project (U) • Silverado Power Project (N)
Biological Resources – Vegetation	NECO planning area	Loss and fragmentation of vegetation and habitat resources, impacts to special status species, contribution to groundwater depletion, and contribution to the spread of nonnative and invasive weeds, channel diversions of desert washes,	• All projects within the NECO planning area listed in Table 4.1-1 and 4.1-2 • Projects closest to the DHSP site are primarily renewable energy and infrastructure projects, and include • Desert Sunlight Solar Farm Project (R) • SCE Red Bluff Substation (S) • Eagle Mountain Wind Project Met Towers (Z) • Devers-Palo Verde No. 2 Transmission Line (D) • Desert Southwest Transmission Line (F) • Desert Center 50 Solar Project (T) • Silverado Power Project (N) • Palen Solar Energy Project (I)
Biological Resources – Wildlife	NECO planning area for most species. Colorado Desert Recovery Unit For the desert tortoise, the geographic scope is the Colorado Desert Recovery Unit, as described in the Revised Recovery Plan for the Mojave Population of the Desert Tortoise	Loss of desert tortoise habitat and connectivity, impacts to sensitive species, impacts to connectivity	• All projects within the NECO planning area listed in Table 4.1-1 and 4.1-2 • Projects closest to the DHSP site are primarily renewable energy and infrastructure projects, and include • Desert Sunlight Solar Farm Project (R) • SCE Red Bluff Substation (S) • Eagle Mountain Wind Project Met Towers (Z) • Devers-Palo Verde No. 2 Transmission Line (D) • Desert Southwest Transmission Line (F) • Desert Center 50 Solar Project (T) • Silverado Power Project (N) • Palen Solar Energy Project (I)
Climate Change	International, global	CO2e	• Global Cumulative Impacts
Cultural Resources	Locally: I-10 corridor between Desert Center and Blythe Regional Level: BLM Southern California Desert Region	Direct effects from physical disturbance or alteration or indirect effects from diminished character and setting of traditional use areas due to the presence of industrial structures	• All projects listed in Table 4.1-1 and 4.1-2. Cumulative analysis estimates cultural resources per acre of impact for these projects.

Table 4.1-3. Cumulative Projects within the Geographic Scope of Cumulative Analysis for Each Resource Area

Resource Area/ BLM Program Area	Geographic Area of Consideration	Elements to Consider	Cumulative BLM Authorized and Other Known Projects/Actions/Activities
Paleontology	Within the I-10 corridor between Desert Center and Blythe	Ground disturbance	All projects listed in Table 4.1-1 and 4.1-2.
Fire and Fuels Management	Within the I-10 corridor from Indio to Blythe, California for emergency response and within 1-mile of the proposed project for fire risk	Increase in fire ignitions, impacts to worker safety, emergency response, and fire protection	• All projects listed in Table 4.1-1 and 4.1-2 for emergency response. • The following projects for fire risk: • Desert Sunlight Solar Farm Project (R) • Chuckwalla Race Track (12) • Devers-Palo Verde No. 1 Transmission Line (4) • Blythe Energy Project Transmission Line (10) • Interstate 10 (1) • Silverado Power Project (N) • SCE Red Bluff Substation (S) • Desert Center 50 (for Alternative E) (T) • Sol Orchard Solar Project (U) • Devers-Palo Verde No. 2 Transmission Line (D)
Soils and Geology	Within 0.5-mile of the proposed project for seismic events and erosion, within the Aeolian sand transport corridor for sand transport	Soil, wind, and water erosion, impacts to the sand transport corridor	• Desert Sunlight Solar Farm Project (R) • Silverado Power Project (N) • Desert Sunlight Transmission Line (R) • SCE Red Bluff Substation (S) • Devers-Palo Verde No. 1 Transmission Line (4) • Blythe Energy Project Transmission Line (10) • Interstate 10 (1) • Devers-Palo Verde No. 2 Transmission Line (D) • Chuckwalla Race Track (Alternative D) (12) • Desert Center 50 Solar Project (Alternative D) (T) • Palen Solar Energy Project (Alternative E) (I)

Table 4.1-3. Cumulative Projects within the Geographic Scope of Cumulative Analysis for Each Resource Area

Resource Area/ BLM Program Area	Geographic Area of Consideration	Elements to Consider	Cumulative BLM Authorized and Other Known Projects/Actions/Activities
Energy and Minerals	Within 5-mile radius of the proposed project and alternatives	Loss of available energy and mineral resources.	• For the proposed project and all alternatives • Desert Sunlight Solar Farm Project (R) • Silverado Power Project (N) • Desert Center 50 Solar Project (T) • Chuckwalla Race Track (12) • Eagle Mountain Pumping Plant (7) • Eagle Mountain Pumped Storage Project (not for Alternative E) (H) • Eagle Mountain Wind Project Met Towers (not for Alternative E) (Z) • For Alternatives B through E • Palen Solar Energy Project (I) • Sol Orchard Solar Project (U) • SCE Red Bluff Substation (S) • Interstate 10 (1) • Devers-Palo Verde No. 1 Transmission Line (4) • Devers-Palo Verde No. 2 Transmission Line (D) • Blythe Energy Project Transmission Line (10)
Lands and Realty	Eastern Riverside County	Impacts to surrounding land and realty uses, conflicts with habitat conservation or natural community conservation plans, increase developed and industrial use	• All projects listed in Tables 4.1-1 and 4.1-2. Large scale energy projects in the nearby vicinity include: • Desert Sunlight Solar Farm Project (R) • Silverado Power Project (N) • Desert Center 50 Solar Project (T) • Eagle Mountain Pumping Plant (7) • Sol Orchard Solar Project (U) • Palen Solar Energy Project (I)
Noise and Vibration	0.5-mile from the area of noise generation.	Additive construction equipment noise	• Desert Sunlight Solar Farm Project (R) • Silverado Power Project (N) • Desert Sunlight transmission line (Alternatives B and C) (R) • Desert Center 50 Solar Project (Alternatives D) (T) • SCE Red Bluff Substation(Alternatives B through E) (S) • Interstate 10 (Alternatives B through E) (1)

Table 4.1-3. Cumulative Projects within the Geographic Scope of Cumulative Analysis for Each Resource Area

Resource Area/ BLM Program Area	Geographic Area of Consideration	Elements to Consider	Cumulative BLM Authorized and Other Known Projects/Actions/Activities
Public Health and Safety	Within the I-10 corridor from Indio to Blythe, California for emergency response and within the proposed project and alternatives and access routes for hazards	Hazardous spills and emergencies or fires at multiple locations	• All projects listed in Table 4.1-1 and 4.1-2 for emergency response. • The following projects for hazardous spills: • Desert Sunlight Solar Farm Project (R) • Desert Center 50 Solar Project (T) • Chuckwalla Race Track (12) • Silverado Power Project (N) • SCE Red Bluff Substation (Alternatives B through E) (S) • Interstate 10 (Alternatives B through E) (1)
Recreation	I-10 Corridor between Indio and Blythe	Impacts to recreational users, impacts to the existing character of the project site	• All projects listed in Table 4.1-1 and 4.1-2 for regional impacts. • The following projects for local recreational impacts: • Desert Sunlight Solar Farm Project (R) • Silverado Power Project (N) • Desert Center 50 Solar Project (T) • Palen Solar Energy Project (I) • Sol Orchard Solar Project (U) • Eagle Mountain Wind Project Met Towers (Z) • Eagle Mountain Pumping Plant (7) • Eagle Mountain Pumped Storage Project (H) • Eagle Mountain Landfill Project (X) • SCE Red Bluff Substation (S) • Devers-Palo Verde No. 1 Transmission Line (4) • Devers-Palo Verde No. 2 Transmission Line (D) • Blythe Energy Project Transmission Line. (5)

Table 4.1-3. Cumulative Projects within the Geographic Scope of Cumulative Analysis for Each Resource Area

Resource Area/ BLM Program Area	Geographic Area of Consideration	Elements to Consider	Cumulative BLM Authorized and Other Known Projects/Actions/Activities
Social and Economic Setting	Riverside County and the cities therein	Impacts to the labor force, impacts on local businesses and residents	• All projects listed in Table 4.1-1 and 4.1-2 for regional impacts. • Regarding labor force the following projects were considered: • Desert Sunlight Solar Farm Project (R) • Silverado Power Project (N) • Palen Solar Energy Project (I) • Blythe Solar Power Project (J) • NextEra (FPL) McCoy Solar Project (L) • McCoy Soleil Project (K) • Genesis Solar Energy Project (M) • Rice Solar Energy Project (O) • Blythe Airport Solar I Project (P) • Desert Quartzite (Q) • Blythe Mesa Solar I Project (V) • Rio Mesa Solar Electric Generating Facility (AA)
Environmental Justice	0.5 mile of the proposed project or its alternatives	Significant environmental impacts in the vicinity of the site	• Interstate 10 (1) • Devers-Palo Verde No. 1 Transmission Line (4) • West-wide Section 368 Energy Corridors (6) • BLM Recreational Opportunities • Blythe Energy Project Transmission Line (10) • Chuckwalla Race Track (12) • Desert Sunlight Solar Farm Project (R) • Silverado Power Project (N) • Devers-Palo Verde No. 2 Transmission Line (D) • Desert Southwest Transmission Line (F) • Sol Orchard Solar Project (U) • SCE Red Bluff Substation (S)

Table 4.1-3. Cumulative Projects within the Geographic Scope of Cumulative Analysis for Each Resource Area

Resource Area/ BLM Program Area	Geographic Area of Consideration	Elements to Consider	Cumulative BLM Authorized and Other Known Projects/Actions/Activities
Special Designations	Northern boundary of the Joshua Tree Wilderness Area south to the southern boundary of the Chuckwalla Mountains Wilderness Area. Eastern and western boundaries would also be determined by the Wilderness Area boundaries	Impacts to lands under special designation	• Interstate 10 (1) • Devers-Palo Verde No. 1 Transmission Line (4) • West-wide Section 368 Energy Corridors (6) • BLM Recreational Opportunities • Blythe Energy Project Transmission Line (10) • Chuckwalla Race Track (12) • Desert Sunlight Solar Farm Project (R) • Silverado Power Project (N) • Devers-Palo Verde No. 2 Transmission Line (D) • Desert Southwest Transmission Line (F) • Sol Orchard Solar Project (U) • SCE Red Bluff Substation (S)
Transportation and Public Access	The regional roadway network considered for analysis of project-impacts	Performance of Circulation System (LOS)	• Eagle Mountain Pumped Storage Project (H) • Palen Solar Energy Project (I) • Desert Sunlight Solar Farm Project (R) • SCE Red Bluff Substation (S) • Desert Center 50 Solar Project (T) • Sol Orchard Solar Project (U) • Eagle Mountain Landfill Project (X) • Silverado Power Project (N)

Table 4.1-3. Cumulative Projects within the Geographic Scope of Cumulative Analysis for Each Resource Area

Resource Area/ BLM Program Area	Geographic Area of Consideration	Elements to Consider	Cumulative BLM Authorized and Other Known Projects/Actions/Activities
Visual Resources	Local and regional viewshed	"Industrialization" or "urbanization" of the existing rural or undeveloped landscape character	• Interstate 10 (1) • Devers-Palo Verde No. 1 Transmission Line (4) • Eagle Mountain Pumping Plant (7) • Kaiser Mine (9) • Blythe Energy Project T-Line (5) • Chuckwalla Race Track (12) • Blythe Energy Project (5) • Blythe PV Project (11) • Devers-Palo Verde No. 2 Transmission Line (D) • Desert Southwest Transmission Line (F) • Eagle Mountain Pumped Storage Project (H) • Blythe Energy Project II (G) • Blythe Solar Power Project (J) • NextEra (FPL) McCoy Solar Project (L) • Palen Solar Energy Project (I) • Desert Sunlight Solar Farm Project (R) • SCE Red Bluff Substation (S) • Desert Center 50 Solar Project (T) • Sol Orchard Solar Project (U) • Eagle Mountain Landfill Project (X) • Eagle Mountain Wind Project Met Towers (Z) • Silverado Power Project (N) • Genesis Solar Energy Project (M) • Blythe Airport Solar I Project (P) • Wiley's Well Communication Tower (Y) • BLM Solar Energy Zones

Table 4.1-3. Cumulative Projects within the Geographic Scope of Cumulative Analysis for Each Resource Area

Resource Area/ BLM Program Area	Geographic Area of Consideration	Elements to Consider	Cumulative BLM Authorized and Other Known Projects/Actions/Activities
Water Resources	Chuckwalla Valley Groundwater Basin	Water supply, surface drainage patterns; flooding and earth-disturbing activities that result in erosion and sedimentation	• Palen Solar Energy Project (I) • desert sunlight solar farm project (R) • SCE Red Bluff Substation (S) • Devers-Palo Verde No. 2 Transmission Line (D) • Colorado River Substation Expansion (E) • Blythe Energy Project Transmission Line (10) • Desert Southwest Transmission Line (F) • Eagle Crest Pumped Storage Startup • Genesis Solar Energy Project (M) • Blythe Energy Project Transmission Line (10) • Desert SouthWest Transmission Line (F) • Silverado Power Project (N) • Sol Orchard Solar Project (U) • Desert Center 50 Solar Project (T)
Wastes, Solid and Hazardous	Eastern Riverside County	Contribution to landfill use and capacity	• All projects listed in Table 4.1-1 and 4.1-2 that would undergo construction for contribution to landfill. • Projects with the most similar types of wastes include: • Desert Sunlight Solar Farm Project (R) • Silverado Power Project (N) • Palen Solar Energy Project (I) • Blythe Solar Power Project (J) • NextEra (FPL) McCoy Solar Project (L) • McCoy Soleil Project (K) • Genesis Solar Energy Project (M) • Rice Solar Energy Project (O) • Blythe Airport Solar I Project (P) • Desert Quartzite (Q) • Blythe Mesa Solar I Project (V) • Rio Mesa Solar Electric Generating Facility (AA) • Desert Center 50 Solar Project (T)

4.2 AIR RESOURCES

4.2.1 Methodology for Analysis

Potential effects on air resources from the proposed project and alternatives may occur as a result of emissions of criteria pollutants from the construction, operation and decommissioning of the proposed project and alternatives. Quantitative emission estimates for criteria pollutants were prepared based on the Applicant provided construction and operation assumptions in order to evaluate the significance of the proposed project and alternatives. Emissions and impacts of decommissioning of the proposed project and alternatives were analyzed qualitatively as well.

The project site area is located under the jurisdiction of the South Coast Air Quality Management District (SCAQMD). SCAQMD has adopted regional emission significance thresholds for construction activities and for project-related operation emissions that are subject to CEQA review. The construction and operation emissions associated with the proposed project and each alternative are compared to these SCAQMD regional emission significance thresholds to determine whether the proposed project and alternatives would result in unavoidable adverse air quality impacts. The SCAQMD regional emission significance thresholds are summarized in Table 4.2-1.

Table 4.2-1. SCAQMD Regional Significance Thresholds (lbs/day)

Pollutant	Construction	Operation
Nitrogen Oxides	100	55
Volatile Organic Compounds	75	55
Carbon Monoxide	550	550
Inhalable Particulate Matter (PM10)	150	150
Fine Particulate Matter (PM2.5)	55	55
Sulfur Oxides	150	150

Source: SCAQMD 2011a

SCAQMD has established Localized Significance Thresholds (LSTs) for each Source Receptor Area (SRA) within the SCAQMD jurisdiction. LSTs are used to determine if a project exceeds ambient air quality standards or cause substantial contribution to existing exceedances at given distances from the site to nearby receptor locations. LSTs for the project site area are presented in Table 4.2-2 below.

Table 4.2-2. SCAQMD Localized Significance Emissions Thresholds

Pollutant	Distance (meters)	Construction (lbs/day)			Operation (lbs/day)		
		1 Acres	3 Acres	5 Acres	1 Acres	3 Acres	5 Acres
Nitrogen Oxides	500	652	684	780	652	684	780
Carbon Monoxide	500	17,640	18,947	22,530	17,640	18,947	22,530
PM10	500	178	186	207	43	45	50
PM2.5	500	86	91	105	21	22	26

Source: SCAQMD 2011b

As presented in Table 3.2-4 in Section 3.2, there are no federal nonattainment or maintenance designations in the Mojave Desert Air Basin portion of Riverside County. Federal agency actions in the Mojave Desert Air Basin portion of Riverside County are not subject to general conformity review requirements.

4.2.2 Applicant Measures

The following Applicant Measures (AMs) have been incorporated as design features of the proposed project (and all action alternatives) and shall be implemented to reduce adverse impacts associated with the project. In some cases, mitigation measures further clarify or expand on AM reporting requirements, timing of implementation, or other details where appropriate. Where there is a conflict between provisions of the mitigation measures imposed for air quality impacts and the following AMs, the mitigation measures take precedence.

AM AQ-1 **Dust Control Plan.** Applicant will develop and implement a dust control plan that includes the use of dust palliatives to ensure compliance with SCAQMD Rule 403. The dust control plan is expected to focus on reducing fugitive dust from construction activities.

AM AQ-2 **Phased construction activity.** Construction activity will be phased across the Solar Project site in a manner that would minimize the area disturbed on any single day.

AM AQ-3 **Minimize emissions from grading.** Cut and fill quantities will be balanced across the Solar Project site to minimize emissions from grading and to avoid the need to import fill materials or to remove excess soil.

AM AQ-4 **Transportation Plan.** Applicant would require bidders for the construction contract to submit a transportation plan describing how workers would travel to the project site and how to encourage carpooling and alternative forms of transportation.

4.2.3 Alternative 1 – No Action (No Plan Amendment)

Under Alternative 1, the Desert Harvest Solar Project (DHSP) would not be approved by the BLM, and BLM would not amend the California Desert Conservation Area (CDCA) Plan. As a result, no solar energy project would be constructed, operated, or decommissioned on the project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no ground disturbance. As a result, impacts would not occur.

4.2.4 Alternative 2 – No Project Alternative (with Plan Amendment to Find the Site Suitable for Solar Energy Development)

Under Alternative 2, the DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site available for future solar energy development. As a result, the DHSP would not be constructed on the project site, and BLM would manage the site

consistent with the amended land use designation in the CDCA Plan. It is possible, as a result of the CDCA Plan amendment, that in the future another solar energy generation project could be proposed with impacts similar to the DHSP, however, such impacts are speculative at this time, and no impacts from the DHSP would occur.

4.2.5 Alternative 3 – No Project Alternative (with Plan Amendment to Find the Site Unsuitable for Solar Energy Development)

Under Alternative 3, the DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site unavailable for future solar energy development. As a result, the DHSP would not be constructed on the project site and BLM would manage the site consistent with the amended land use designation in the CDCA Land Use Plan. No impacts from the DHSP would occur.

4.2.6 Alternative 4 – Proposed Solar Project

Construction

Construction is anticipated to commence during the 2nd quarter of 2013, and continue through the 3rd quarter of 2015, in three phases. Commercial operation would also be phased and the first phase of operation would commence during the 2nd quarter of 2014, with commercial operation of the final phase commencing during the 3rd quarter of 2015. The construction schedule would be as follows:

- Phase 1 Construction: April 2013 to July 2013 (3 months)
- Phase 2 Construction: September 2013 to November 2014 (14 months)
- Phase 3 Construction: November 2014 to May 2015 (6 months)

Construction of Phase 1 would include pre-construction surveys, exclusion fencing around a 10-acre area in the northwest corner of the DHSP site, desert tortoise exclusion (if tortoise are present), clearing and construction of a laydown yard, parking area, and pad mounts for transformers.

Construction of Phase 2 would include site fencing, installation of temporary power, site grading and preparation over a 1,043-acre area, construction of the O&M building (if necessary) and on-site roads, construction of the on-site wells, construction of the project substation and switch-yard, and assembly and installation of panel blocks and wiring for 137 MW of solar power.

Construction of Phase 3 would include site grading and preparation over a 155-acre area, assembly and installation of panel blocks and wiring for 13 MW of solar power. Panel blocks would not be installed within the FERC exclusion area crossing the southern parcel (see Figure 2-3a in Appendix A for more detail).

Construction would generally occur 2 hours before sunrise and 2 hours after sunset, Monday through Friday. Additional hours may be necessary to correct DHSP schedule deficiencies or to complete critical construction activities. For instance, during hot weather, it may be necessary to start work earlier to avoid pouring concrete during high ambient temperatures. During the startup phase of the project, some activities may be performed over the weekend.

Direct Effects

Construction of Alternative 4 would result in emissions of the following air pollutants: VOCs, NOx, carbon monoxide (CO), particulate matter under 10 micrometers in diameter (PM10), particulate matter under 2.5 micrometers in diameter (PM2.5), and sulfur oxides (SOx).

Emissions from construction would result from fuel combustion and exhaust from construction equipment and vehicle traffic, grading, and use of volatile building materials (e.g., paints and lubricants). Fugitive dust emissions would be generated from earth moving activities such as dozing, grading and material loading/handling, and vehicle trips on paved/unpaved roads. Land disturbance during construction would also result in generation of fugitive dust due to wind erosion. Emissions are estimated based on following assumptions and project schedule as provided by the Applicant:

- Emissions are estimated based on the construction schedule and equipment, and operating equipment and activities provided by the Applicant.
- The number of on-road truck trips and the number of construction employee trips are provided by the Applicant. Construction vehicles and equipment are shown in Chapter 2, and emissions are conservatively estimated for potentially overlapping truck deliveries and other vehicles causing up to 56 daily deliveries.
- Average number of construction workers would be 100 with the maximum of 250 construction workers during peak days.
- Construction workers could commute from housing centers in the Mojave Desert Air Basin, such as Blythe, or from outside the project study area, such as Palm Springs. To account for worker trips that may extend to the boundary of the air basin, the maximum length would be an estimated 75 miles for each one-way trip for each employee vehicle. The origin of the raw materials was not specified by the Applicant therefore assumed to require a one-way trip of 75 miles. Emissions for travel over greater distances would be outside the project study area.

Project construction emissions were estimated using California Emissions Estimator Model (CalEEMod, ver. 2011.1.1). Although the project emissions were modeled based on the construction schedule, equipment, vehicle trips provide by the Applicant, detailed information about construction equipment and trip requirement for each phase was not provided. Therefore, the project construction was modeled as a single phase assuming that construction equipment provided by the Applicant is daily average requirement.

Tables 4.2-3 and 4.2-4 summarize the daily and annual mitigated construction air emissions with implementation of Tier 3 equipment, oxidation catalyst, diesel particulate filter (DPF), soil stabilizer, and watering (3 times/day). See Appendix D for unmitigated emissions estimates. Table 4.2-3 compares the maximum mitigated daily construction emissions with the recommended SCAQMD thresholds of significance as shown in Table 4.2-1.

Table 4.2-3. Mitigated Daily Construction Emissions (lbs/day), Alternative 4 – Proposed Solar Project

	VOC	NOx	CO	PM10	PM2.5	SO_2
Month 1-4	111.29	359.15	698.13	268.21	49.64	1.06
Month 5-16	94.27	354.63	783.09	262.41	48.88	1.23
Month 17-24	90.16	341.02	751.84	262.00	48.46	1.23
Thresholds	75	100	550	150	55	150

Note: Maximum daily construction emissions could be higher on certain days with more construction employees than the average number of construction employees.
Source: See Appendix D for detailed modeling assumptions and emission estimates.

Table 4.2-4. Mitigated Annual Construction Emissions (tons/year), Alternative 4 – Proposed Solar Project

	VOC	NOx	CO	PM10	PM2.5	SO_2
Month 1-4	4.62	15.27	27.66	10.74	2.08	0.05
Month 5-16	11.84	45.80	95.93	31.84	6.18	0.16
Month 17-24	7.52	29.21	61.39	21.07	4.06	0.11
Total	23.98	90.28	184.98	63.65	12.32	0.32

Source: See Appendix D for detailed modeling assumptions and emission estimates.

Mitigated maximum daily emissions are estimated to exceed the thresholds of VOC, NOx, CO, and PM10 as presented in Table 4.2-3. Because Alternative 4 would result in substantial VOC, NOx, CO, and PM10 emissions, Mitigation Measures AIR-1 (Fugitive Dust Control Plan) and AIR-2 (Control On-Site Emissions) are imposed to minimize air quality impacts to the extent feasible as recommended by SCAQMD for projects subject to CEQA and as required by SCAQMD Rule 403 (SCAQMD 2011c). The full text of Mitigation Measures is presented below.

Sensitive receptors would be affected by temporary and unavoidable adverse impacts from construction of Alternative 4. There are a few scattered rural residences within 1.5 miles of the proposed solar facility. The closest occupied residence is 6,500 feet (1.24 miles) east-southeast from the proposed solar facility property line. All other nearby homes are 7,800 feet (1.48 miles) or farther from the proposed solar facility property line. JTNP is located 1.8 miles to the northeast, 3.5 miles to the west, and over 7 miles to the north. The Eagle Mountain Elementary School and the Eagle Mountain Village residential area are over 5.5 miles northwest of the proposed solar facility site. The Lake Tamarisk development is about 2.75 miles south of the proposed solar facility site. The community of Desert Center is about 5 miles south of the proposed solar facility site. Due to the distances from the project site, localized impacts on sensitive receptors would not be adverse. There are no appropriate LSTs for Alternative 4 since the maximum receptor distances associated with LSTs is 500 meters (1,640 feet) while the nearest residential receptor is located more than 1,980 meters (6,500 feet) from the proposed solar facility site.

As noted in Section 3.2, Air Resources, the Class I area closest to the project is the JTNP. Visibility is considered an important air quality value to be protected within JTNP. Since the nearest boundary of the JTNP is 1.8 miles from the project site, airborne dust generated at the project site could be visible during construction from within the park, especially because low humidity

provides clear vistas and relatively low haze. Construction activities would not require use of any major stationary sources that could permanently affect regional air quality or visibility at the Class I area, and the sources of emissions during construction would occur near the ground level where dust would have a limited ability to notably affect distant vistas. Precursors to haze would also be intermittently released near ground level by construction equipment exhaust. Because of the diffuse and intermittent nature of construction sources, the emissions would be widely dispersed across the project site, and concentrations near the JTNP would be greatly reduced and much lower than the localized effects near the project site. Emissions during construction of Alternative 4 would occur primarily during daytime hours and would be controlled to avoid visible plumes as required by SCAQMD Rule 403. Airborne dust generated by wind erosion would be greatly reduced in concentration over nighttime hours when construction activity ceases for the day. Construction activity would be phased across the solar project site over a 2-year period, limiting the amount of disturbed area that could produce fugitive dust from wind erosion at any one time. In addition, Mitigation Measures AIR-1 (Fugitive Dust Control Plan) and MM AIR-2 (Control On-Site Emissions) would be implemented to reduce dust and equipment exhaust emissions by requiring use of newer equipment and other strategies like electrification of equipment. These emissions control requirements ensure that development of Alternative 4 would result in only a small and temporary increase in wind erosion potential or visibility reduction compared to natural conditions. Consequently, construction of Alternative 4 with dust controlled to avoid visible plumes as required by SCAQMD Rule 403 would not produce an adverse impact to vistas or in night sky visibility in the JTNP Class I area.

Indirect Effects

There would be no indirect effects associated with Alternative 4 during construction.

Operation and Maintenance

Operation activities would include routine maintenance of the solar project, removal of noxious weeds, and roads maintenance. Routine maintenance includes torque electrical fittings, cleaning of switch gear, calibration of protective relays, fire protection system test and annual certification, fuse swapping and testing of ground fault detection and power quality. In order to perform these operation and maintenance activities, the project would require 16 full-time staff and 4 pickup trucks on-site.

Direct Effects

Operation of Alternative 4 would result in substantially lower emissions than project construction, since Alternative 4 would not have any major stationary emission sources. Operation emissions of Alternative 4 would be limited to maintenance activities and vehicles trips required for operation/maintenance. Fugitive dust emissions during operation would be generated mostly from vehicle trips for employee commutes, security, and maintenance activities. Operation emissions are estimated based on the maintenance activities and equipment provided by the Applicant.

Tables 4.2-5 and 4.2-6 summarize the daily and annual mitigated operation air emissions. See Appendix D for unmitigated emissions estimates.

Table 4.2-5. Mitigated Daily Operation Emissions (lbs/day), Alternative 4 – Proposed Solar Project

	VOC	NOx	CO	PM10	PM2.5	SO_2
Daily Emissions	2.89	3.50	30.68	49.62	4.88	0.04
Thresholds	55	55	550	150	55	150

Source: See Appendix D for detailed modeling assumptions and emission estimates.

Table 4.2-6. Mitigated Annual Operation Emissions (tons/year), Alternative 4 – Proposed Solar Project

	VOC	NOx	CO	PM10	PM2.5	SO_2
Annual Emissions	1.53	0.46	4.55	8.97	0.88	0.01

Source: See Appendix D for detailed modeling assumptions and emission estimates.

As shown in Table 4.2-5, with mitigation, operation emissions for all criteria pollutants would be below the SCAQMD thresholds. Similar to construction, fugitive dust emissions during operation of Alternative 4 would occur primarily during daytime hours. Airborne dust generated from the project site would be widely and intermittently dispersed across the site. Due to the very limited operation emission sources, operation dust emissions would be minimal and would be reduced further by implementing Mitigation Measure AIR-3 (Control Operational Fugitive Dust). Therefore, the project operation would result in a negligible increase in wind erosion potential, and would not result in an adverse impact on visibility.

Mitigation Measure AIR-3 (Control Operational Fugitive Dust) is required to reduce particulate emissions to the extent feasible in accordance with SCAQMD rules and regulations and to ensure that the PM10 emission would be below the SCAQMD regional significance threshold of 150 lbs/day.

Implementation of Mitigation Measure AIR-4 (Control Equipment Emissions) would reduce NOx emissions. This mitigation measure would ensure that the project's diesel particulate matter (DPM) and NOx emissions are reasonably mitigated.

Indirect Effects

The electricity produced by Alternative 4 would displace electricity generated from other power plants, which would avoid the need for their operation. However, the exact nature and location of any changes in criteria air pollutant emission rates is not known and would not likely occur near the project area.

Decommissioning

At the end of the life of Alternative 4, above-ground structures would be removed and demolished, and the site would be returned to its original condition. Decommissioning activities and equipment would be similar to those for project construction.

Direct Effects

Decommissioning of Alternative 4 would require disassembly of the solar panels, demolition of on-site building, and removal of perimeter fencing. After removal of equipment and buildings, the site would need to be re-vegetated. Equipment used for decommissioning would generally

be similar to that used for construction, except that no grading and clearing would be required. Since decommissioning of Alternative 4 does not involve grading or clearing activities, the level of fugitive dust emissions would be less than emissions created during construction. In addition, the site is likely to be re-vegetated, which would further reduce fugitive dust emissions. Because decommissioning would occur after serving at least 30 years, it is likely that equipment engine technology would be more advanced and fuel would be cleaner. Mitigation measures that are similar to those identified for Alternative 4 construction would be implemented during decommissioning, as part of the decommission plan to be developed and approved by the BLM. Therefore, criteria pollutant emissions generated during decommissioning would be significantly less than the emissions estimated for project construction.

While criteria pollutant emissions associated with decommissioning would be less than the estimated project construction emissions, it is difficult to determine the impacts of project decommissioning due to uncertainties of air quality conditions, visibility, and federal and state regulatory standards in the future.

Indirect Effects

There would be no indirect effects associated with Alternative 4 during decommissioning.

Mitigation Measures

The following mitigation measures would be implemented to reduce NOx, PM10 and PM2.5 emissions to the maximum extent feasible.

MM AIR-1 **Fugitive Dust Control Plan.** The project owner shall develop a Fugitive Dust Control Plan in compliance with SCAQMD Rule 403 to reduce PM10 and PM2.5 emissions during construction. The Fugitive Dust Control Plan shall include:

- Name(s), address(es), and phone number(s) of person(s) responsible for the preparation, submission, and implementation of the plan;
- Description and location of construction activities; and
- Listing of all fugitive dust emissions sources included in the construction activities.
- The following dust control measures shall be implemented:

  The road leading to the operations and maintenance facility shall be paved as early as practical during construction.

  All other onsite unpaved roads shall be effectively stabilized using soil stabilizers that can be determined to be as efficient as or more efficient for fugitive dust control than California Air Resources Board approved soil stabilizers, and that shall not increase any other environmental impacts including loss of vegetation.

  All material excavated or graded will be sufficiently watered to prevent excessive dust. Watering will occur as needed with complete coverage of disturbed areas. The excavated soil piles are watered hourly for the duration of construction or covered with temporary coverings.

Construction activities that occur on unpaved surfaces will be discontinued during windy conditions when winds exceed 25 miles per hour and when those activities cause visible dust plumes. All grading activities shall be suspended when wind speeds are greater than 30 miles per hour.

Track-out shall not extend 25 feet or more from an active operation and track-out shall be removed at the conclusion of each workday.

A wheel-washing system shall be installed and used to remove bulk material from tires and vehicle undercarriages before vehicles exit the project property.

All hauling materials should be moist while being loaded into dump trucks. All haul trucks hauling soil, sand, and other loose materials shall be covered (e.g., with tarps or other enclosures that would reduce fugitive dust emissions).

Soil loads should be kept below 18 inches or the freeboard of the truck.

Drop heights should be minimized when loaders dump soil into trucks.

Gate seals should be tight on dump trucks.

Traffic speeds on unpaved roads shall be limited to 15 miles per hour.

Other fugitive dust control measures as necessary to comply with South Coast Air Pollution Control District Rules and Regulations.

Disturbed areas should be minimized.

Disturbed areas should be revegetated as soon as possible after disturbance.

- For JTNP, the project shall not result in an increase in ambient dust conditions within the Park boundaries during construction. During construction, the project owner shall contribute fair-share funding for operation of existing dust monitoring stations associated with the Desert Sunlight Solar Farm project. Fair-share funding shall be negotiated with the Desert Sunlight Solar Farm project and approved by JTNP. The project owner shall provide access to real-time dust monitoring data to Park staff to the extent feasible, and shall immediately address non-compliance with Park dust standards with Park staff. The burden of proof of infeasibility of real-time monitoring shall rest with the project owner.
- The project owner shall provide an on-site dust monitor on weekend days (Saturday and Sunday) and holidays during the construction period (i.e., during non-working daytime hours) to ensure that fugitive dust conditions from destabilized soils are immediately detected. The on-site dust monitor shall immediately respond to fugitive dust conditions at the project site by mobilizing project personnel to apply water or other approved dust palliatives to destabilized soils in authorized work zones. The monitor shall document all dust palliative compliance events in a log to be submitted to the National Park Service and the BLM within one week after the occurrence of each non-compliance event. Both the duration of the event and a description of the response shall be documented in the log.

MM AIR-2 **Control On-Site Emissions.** The project owner shall control emissions from the on-site off-road construction equipment by implementing the following:

- All off-road construction diesel engines not registered under California Air Resources Board's Statewide Portable Equipment Registration Program, which have a rating of 50 horsepower to 750 horsepower, shall meet, at a minimum, the Tier 3 California Emission Standards for Off-road Compression-Ignition Engines as specified in California Code of Regulations, Title 13, section 2423(b)(1) unless that such engine is not available for a particular item of equipment. In the event a Tier 3 or Tier 4 engine is not available for any off-road engine larger than 100 horsepower and smaller than 750 horsepower, that engine shall be equipped with retrofit controls that would provide nitrogen oxides and particulate matter emissions that are equivalent to Tier 3 engine. Off-road equipment with diesel engines larger than 750 horsepower shall meet Tier 2 or Tier 3 California Emission Standards.
- All equipment shall be turned off when not in use. Engine idling of all equipment shall be minimized.
- All equipment engines shall be maintained in good operating condition and in proposed tune per manufacturers' specification.
- Where appropriate, use alternatively fueled construction equipment, and utilize grid-based electricity and/or onsite renewable electricity generation rather than diesel and/or gasoline powered generators.
- Construction contracts shall incorporate the following controls to ensure effective implementation of the emission reductions: employ periodic unscheduled inspections to limit unnecessary idling and to ensure that construction equipment is properly maintained and tuned; prohibit any tampering with engines; identify where implementation of mitigation measures is rejected based on economic infeasibility.

MM AIR-3 **Control Operational Fugitive Dust.** The project owner shall control fugitive dust from the unpaved roads on the site during operation using the following methods:

- The main access road for employees and deliveries to the maintenance complex shall be paved as early during construction as practical.
- The other unpaved roads at the site shall be stabilized using water or soil stabilizers so that vehicle travel on these roads does not cause visible dust plumes.
- Traffic speeds on unpaved roads shall be limited to no more than 15 miles per hour. Traffic speed signs shall be displayed prominently at all site entrances and at egress point(s) from the central maintenance complex.
- For JTNP, the project shall not result in an increase in ambient dust conditions within the Park boundaries during operation. Over the operational life of the project, the project owner shall contribute fair-share funding for operation of

existing dust monitoring stations associated with the Desert Sunlight Solar Farm project. Fair-share funding shall be negotiated with the Desert Sunlight Solar Farm project and approved by JTNP. The project owner shall provide access to real-time dust monitoring data to Park staff to the extent feasible, and shall immediately address non-compliance with Park dust standards with Park staff. The burden of proof of infeasibility of real-time monitoring shall rest with the project owner.

MM AIR-4 **Control Equipment Emissions.** The project owner shall control emissions from the on-site dedicated equipment (i.e., equipment that would remain on site each day) by implementing the following:

- All on-site on-road vehicles for operation/maintenance shall be new equipment that meets the recent California Air Resources Board engine emission standards or alternatively fueled construction equipment, such as compressed natural gas, liquefied natural gas, or electric, as appropriate.
- All equipment shall be turned off when not in use. Engine idling of all equipment shall be minimized.

Residual Impacts and Unavoidable Adverse Effects

Mitigation Measures AIR-1 (Fugitive Dust Control Plan) and MM AIR-3 (Control Operational Fugitive Dust) would mitigate particulate matter emissions during construction and operation to the maximum extent feasible. Mitigation Measures AIR-2 (Control On-Site Emissions) and MM AIR-4 (Control Equipment Emissions) would mitigate DPM and NOx emissions to the extent feasible by requiring use of newer equipment and other strategies like electrification of equipment. Nonetheless, Alternative 4 would have temporary and unavoidable adverse VOC, NOx, CO, and PM10 impacts during construction because, as explained above, daily construction emissions would exceed SCAQMD thresholds. Unlike construction, operation of Alternative 4 would not have any unavoidable adverse effects as the operation and maintenance activities required would be minimal. For all other criteria pollutants, the impacts would not be substantial during either construction or operation. Decommissioning of Alternative 4 would require activities that are similar to construction, but criteria pollutant emissions generated during decommissioning would be less than construction emissions since it is likely that equipment engine technology would be more advanced and fuel would be cleaner at the time of decommissioning. While criteria pollutant emissions associated with decommissioning would be less than the estimated project construction emissions, it is difficult to determine the impacts of project decommissioning due to uncertainties of air quality conditions, visibility, and federal and state regulatory standards in the future.

4.2.7 Alternative 5 – Solar Project Excluding WHMA

Alternative 5 would exclude the portion of the site which is within the Palen-Ford Wildlife Habitat Management Area (WHMA). Alternative 5 would encompass 1,161 acres and the areas cleared of vegetation would be the same as for Alternative 4, 107 acres.

Construction

Construction components of Alternative 5 would be identical to those of Alternative 4.

Direct Effects

Alternative 5 would require slightly less construction materials and related truck trips, and possibly slightly fewer construction workers than Alternative 4; however, the difference would be minimal. Due to the reduced area of disturbance, fugitive dust emissions generated under Alternative 5 are expected to be slightly less than those under Alternative 4. Therefore, Alternative 5 would generate slightly less emissions for all criteria pollutants, but the air quality impacts under Alternative 5 would be essentially the same as those impacts under Alternative 4. All of the same mitigation measures are required

Indirect Effects

There would be no indirect effects associated with Alternative 5 during construction.

Operation and Maintenance

Operation and maintenance activities under Alternative 5 would be almost identical to those under Alternative 4.

Direct Effects

Similar to Alternative 4, emission sources for Alternative 5 operation would be limited to vehicles trips required for employee commutes and operation/maintenance activities. Therefore, operation emissions would be substantially less than construction emissions. Air quality impacts during Alternative 5 would be similar to those impacts during Alternative 4; therefore operation of Alternative 5 would not result in an unavoidable adverse impact. All of the same mitigation measures are required as for Alternative 4.

Indirect Effects

Similar to Alternative 4, the electricity produced by Alternative 5 would also displace electricity generated from other power plants, which would avoid the need for their operation. Indirect operation impacts of Alternative 5 would be identical to those of Alternative 4.

Decommissioning

Decommissioning under Alternative 5 would be essentially to same as decommissioning under Alternative 4, except that the area needs to be re-vegetated would be smaller due to the smaller disturbance acres.

Direct Effects

Required decommissioning activities and equipment under Alternative 5 would be similar to those described under Alternative 4. Alternative 5 would require slightly less equipment use due to the smaller disturbance area subject to re-vegetation during decommissioning. However, the difference would be minimal; therefore impacts of Alternative 5 decommissioning would be essentially identical to those of Alternative 4 decommissioning.

Indirect Effects

There would be no indirect effects associated with Alternative 5 during decommissioning.

Mitigation Measures

The measures identified for Alternative 4 would also be implemented under Alternative 5.

Residual Impacts and Unavoidable Adverse Effects

Residual impacts after mitigation of Alternative 5 would be identical to those of Alternative 4. Alternative 5 would have temporary and unavoidable adverse VOC, CO, NOx, PM10 and PM2.5 impacts during construction. Unlike construction, Alternative 5 operation would not have any unavoidable adverse effects as the operation/maintenance activities required for Alternative 5 would be minimal. Decommissioning of Alternative 5 would require activities that are similar to construction, but criteria pollutant emissions generated during decommissioning would be less than construction emissions since it is likely that equipment engine technology would be more advanced and fuel would be cleaner at the time of decommissioning. While criteria pollutant emissions associated with decommissioning would be less than the estimated project construction emissions, it is difficult to determine the impacts of project decommissioning due to uncertainties of air quality conditions, visibility, and federal and state regulatory standards in the future.

4.2.8 Alternative 6 – Reduced Footprint Solar Project

Alternative 6 would exclude the 155-acre southern parcel of the project and minor portions in the northern parcel. Alternative 6 would encompass 1,044 acres and the areas cleared of vegetation would be slightly less than those for Alternative 4.

Construction

Construction components of Alternative 6 would be identical to those of Alternative 4.

Direct Effects

Alternative 6 would require slightly less construction materials and related truck trips, and possibly slightly fewer construction workers than Alternative 4; however, the difference would be minimal. Due to the reduced area of disturbance, fugitive dust emissions generated under Alternative 6 are expected to be slightly less than those under Alternative 4. Therefore, Alternative 6 would generate slightly less emissions for all criteria pollutants, but the air quality impacts under Alternative 6 would be essentially the same as those impacts under Alternative 4. All of the same mitigation measures are required

Indirect Effects

There would be no indirect effects associated with Alternative 6 during construction.

Operation and Maintenance

Operation and maintenance activities under Alternative 6 would be almost identical to those under Alternative 4.

Direct Effects

Similar to Alternative 4, emission sources for Alternative 6 operation would be limited to vehicles trips required for employee commutes and operation/maintenance activities. Therefore,

operation emissions would be substantially less than construction emissions. Air quality impacts during Alternative 6 would be similar to those impacts during Alternative 4; therefore operation of Alternative 6 would not result in an unavoidable adverse impact. All of the same mitigation measures are required as for Alternative 4.

Indirect Effects

Similar to Alternative 4, the electricity produce by Alternative 6 would also displace electricity generated from other power plants, which would avoid the need for their operation. Indirect operation impacts of Alternative 6 would be identical to those of Alternative 4.

Decommissioning

Decommissioning under Alternative 6 would be essentially to same as decommissioning under Alternative 4, except that the area needs to be re-vegetated would be smaller due to the smaller disturbance acres.

Direct Effects

Required decommissioning activities and equipment under Alternative 6 would be similar to those described under Alternative 4. Alternative 6 would require slightly less equipment use due to the smaller disturbance area subject to re-vegetation during decommissioning. However, the difference would be minimal; therefore impacts of Alternative 6 decommissioning would be essentially identical to those of Alternative 4 decommissioning.

Indirect Effects

There would be no indirect effects associated with Alternative 6 during decommissioning.

Mitigation Measures

The measures identified for Alternative 4 would also be implemented under Alternative 6.

Residual Impacts and Unavoidable Adverse Effects

Residual impacts after mitigation of Alternative 6 would be identical to those of Alternative 4. Alternative 6 would have temporary and unavoidable adverse VOC, CO, NOx, and PM10 impacts during construction. Unlike construction, Alternative 6 operation would not have any unavoidable adverse effects as the operation/maintenance activities required for Alternative 6 would be minimal. Decommissioning of Alternative 6 would require activities that are similar to construction, but the impacts would be less than construction impacts since it is likely that equipment engine technology would be more advanced and fuel would be cleaner at the time of decommissioning.

4.2.9 Alternative 7 – High-Profile Reduced Footprint Solar Project

Alternative 7 would be constructed within the same project boundaries as Alternative 6. Alternative 7 would encompass an estimated 1,044 acres and would be an estimated 150 MW nominal capacity project. Project details are the same as for Alternative 4, with the only exception being the overall height of the panels for Alternative 7. Alternative 7 would use high-profile single-axis tracking panels that would have a total height of 15 feet.

Construction

Construction components of Alternative 7 would be identical to those of Alternative 4.

Direct Effects

Alternative 7 would require slightly less construction materials and related truck trips, and possibly slightly fewer construction workers than Alternative 4; however, the difference would be minimal. Due to the reduced area of disturbance, fugitive dust emissions generated under Alternative 7 are expected to be slightly less than those under Alternative 4. Therefore, Alternative 7 would generate slightly less emissions for all criteria pollutants, but the air quality impacts under Alternative 7 would be essentially the same as those impacts under Alternative 4. All of the same mitigation measures are required

Indirect Effects

There would be no indirect effects associated with Alternative 7 during construction.

Operation and Maintenance

Operation and maintenance activities under Alternative 7 would be almost identical to those under Alternative 4.

Direct Effects

Similar to Alternative 4, emission sources for Alternative 7 operation would be limited to vehicles trips required for employee commutes and operation/maintenance activities. Therefore, operation emissions would be substantially less than construction emissions. Air quality impacts during Alternative 7 would be similar to those impacts during Alternative 4; therefore operation of Alternative 7 would not result in an unavoidable adverse impact. All of the same mitigation measures are required as for Alternative 4.

Indirect Effects

Similar to Alternative 4, the electricity produce by Alternative 7 would also displace electricity generated from other power plants, which would avoid the need for their operation. Indirect operation impacts of Alternative 7 would be identical to those of Alternative 4.

Decommissioning

Decommissioning under Alternative 7 would be essentially to same as decommissioning under Alternative 4, except that the area needs to be re-vegetated would be smaller due to the smaller disturbance acres.

Direct Effects

Required decommissioning activities and equipment under Alternative 7 would be similar to those described under Alternative 4. Alternative 7 would require slightly less equipment use due to the smaller disturbance area subject to re-vegetation during decommissioning. However, the difference would be minimal; therefore impacts of Alternative 7 decommissioning would be essentially identical to those of Alternative 4 decommissioning.

Indirect Effects

There would be no indirect effects associated with Alternative 7 during decommissioning.

Mitigation Measures

The measures identified for Alternative 4 would also be implemented under Alternative 7.

Residual Impacts and Unavoidable Adverse Effects

Residual impacts after mitigation of Alternative 7 would be identical to those of Alternative 4. Alternative 7 would have temporary and unavoidable adverse VOC, CO, NOx, and PM10 impacts during construction. Unlike construction, Alternative 7 operation would not have any unavoidable adverse effects as the operation/maintenance activities required for Alternative 7 would be minimal. Decommissioning of Alternative 7 would require activities that are similar to construction, but the impacts would be less than construction impacts since it is likely that equipment engine technology would be more advanced and fuel would be cleaner at the time of decommissioning.

4.2.10 Alternative A – No Gen-Tie

Under Alternative A, the proposed gen-tie line would not be constructed. There would be no disturbance of the ground at the tower locations and pull sites, no disturbance of desert vegetation and habitat, and no installation of transmission equipment. Therefore, the construction, operation, and decommissioning impacts associated with the gen-tie line would not occur.

4.2.11 Alternative B – Proposed Gen-Tie (Shared Towers)

Alternative B would utilize transmission infrastructure developed for First Solar's Desert Sunlight Solar Farm Project by sharing the approved transmission towers. Stringing of the project owner's gen-tie line would commence occur over an estimated 12 months. However, since this construction had not yet begun in September 2011 on the previously-approved towers, this analysis assumes that Alternative B would require all related construction activities.

Construction

Construction of Alternative B would cause both temporary and permanent disturbance within a construction corridor estimated at a width of 160 feet, plus additional fan-shaped areas at each turn in the alignment with radii of 450 feet needed for wire stringing. The permanent disturbance associated with Alternative B would be limited to the foundations of the transmission structures, the footprint of the access road, and two 75-foot by 200-foot areas associated with each fan-shaped stringing area, as described previously.

Direct Effects

Construction of Alternative B would result in emissions of the following air pollutants: VOCs, NOx, CO, PM10, PM2.5, and SOx.

Emissions from construction would result from fuel combustion and exhaust from construction equipment and vehicle traffic, grading, and use of polluting building materials (e.g., paints and lubricants). Fugitive dust emissions would be generated from earth moving activities such as

dozing, grading and material loading/handling, and vehicle trips on paved/unpaved roads. Land disturbance during construction would also result in generation of fugitive dust due to wind erosion. Emissions are estimated based on following assumptions and project schedule provided by the Applicant:

- Emissions are estimated based on the construction equipment provided by the Applicant.
- The number of on-road truck trips and the number of construction employee trips are provided by the Applicant.
- Average number of construction workers would be 30 with the maximum of 65 construction workers during peak days.
- Construction workers could commute from housing centers in the Mojave Desert Air Basin, such as Blythe, or outside the project study area, such as Palm Springs. To account for worker trips that may extend to the boundary of the air basin, the maximum length would be an estimated 75 miles for each one-way trip for each employee vehicle. The origin of the raw materials was not specified by the Applicant and therefore assumed to require a one-way trip of 75 miles. Emissions for travel over greater distances would be outside the project study area.

Project construction emissions are estimated using California Emissions Estimator Model (CalEEMod, ver. 2011.1.1). Tables 4.2-7 and 4.2-8 summarize the daily and annual mitigated construction air emissions. Table 4.2-7 compares the maximum mitigated daily construction emissions with the recommended SCAQMD thresholds of significance as shown in Table 4.2-1.

Table 4.2-7. Mitigated Daily Construction Emissions (lbs/day), Alternative B – Proposed Gen-Tie (Shared Towers)

	VOC	NOx	CO	PM10	PM2.5	SO_2
Month 1-4	24.35	135.93	156.20	8.40	8.40	0.3
Month 5-12	21.81	123.48	144.18	7.92	7.92	0.3
Thresholds	75	100	550	150	55	150

Note: Maximum daily construction emissions could be higher on certain days with more construction employees than the average number of construction employees
Source: See Appendix D for detailed modeling assumptions and emission estimates.

Table 4.2-8. Mitigated Annual Construction Emissions (tons/year), Alternative B – Proposed Gen-Tie (Shared Towers)

	VOC	NOx	CO	PM10	PM2.5	SO_2
Month 1-4	0.65	3.48	4.79	0.20	0.20	0.01
Month 5-12	0.30	1.61	2.26	0.10	0.10	0.00
Total	0.95	5.09	7.05	0.30	0.30	0.01

Source: See Appendix D for detailed modeling assumptions and emission estimates.

Mitigation Measures AIR-1 (Fugitive Dust Control Plan) and MM AIR 2 (Control On-Site Emissions) would mitigate dust and NOx emissions from construction of Alternative B to the extent feasible. Mitigated maximum daily emissions are estimated to be below the thresholds for all criteria pollutants, except for daily NOx emissions, as presented in Table 4.2-7. For all crite-

ria pollutants, construction emissions associated with gen-tie line construction would be lower than those associated with the solar project construction. Therefore, the mitigated impacts of Alternative B on sensitive receptors and visibility would be substantially less than those described for Alternative 4.

Indirect Effects

There would be no indirect effects associated with Alternative B during construction.

Operation and Maintenance

DHSP operations and maintenance personnel would perform periodic maintenance of the Gen-tie line, and no additional personnel would be required. Operation and maintenance of the proposed project gen-tie line would involve periodic inspection via helicopter or truck. Gen-tie line maintenance activities that would be performed by trucks are included as part of the activity assumptions for DHSP (Alternative 4). The trans-mission lines would be maintained on an as-needed basis and would include maintenance of access roads and erosion/drainage control structures.

Direct Effects

It is assumed that activity to support operation of Alternative 4 would include all necessary operation/maintenance vehicle trips required for Alternative B. No additional personnel would be required for Alternative B; therefore no additional impacts beyond those described with respect to the operation and maintenance of Alternative 4 would occur.

Indirect Effects

No additional personnel would be required for Alternative B; therefore no impacts would occur.

Decommissioning

At the end of the life of Alternative B, equipment and facilities would be removed and demolished, and the site would be returned to its original condition.

Direct Effects

Equipment used for decommissioning would generally be similar to that used for construction. Because decommissioning would occur after serving at least 30 years, it is likely that equipment engine technology would be more advanced and fuel would be cleaner. Additionally, mitigation measures that are similar to those identified for Alternative 4 construction would also be implemented during decommissioning. Therefore, criteria pollutant emissions during decommissioning of Alternative B would be significantly less than the emissions estimated for construction of Alternative B. While criteria pollutant emissions associated with decommissioning would be less than the estimated project construction emissions, it is difficult to determine the impacts of project decommissioning due to uncertainties of air quality conditions, visibility, and federal and state regulatory standards in the future.

Indirect Effects

There would be no indirect effects associated with Alternative B during decommissioning.

Mitigation Measures

The measures identified for Alternative 4 would also be implemented under Alternative B.

Residual Impacts and Unavoidable Adverse Effects

Mitigation Measures AIR-1 (Fugitive Dust Control Plan) and MM AIR-3 (Control Operational Fugitive Dust) would mitigate particulate matter emissions during construction and operation to the maximum extent feasible. Mitigation Measures AIR-2 (Control On-Site Emissions) and MM AIR-4 (Control Equipment Emissions) would mitigate DPM and NOx emissions to the extent feasible by requiring use of newer equipment and other strategies like electrification of equipment. Nonetheless, Alternative B would have temporary and unavoidable adverse NOx impacts during construction. Alternative B operation would not have any unavoidable adverse effects as the operation/maintenance activities required for Alternative B would be minimal. Decommissioning of Alternative B would require activities that are similar to construction, but criteria pollutants emissions would be less than construction emissions since it is likely that equipment engine technology would be more advanced and fuel would be cleaner at the time of decommissioning. While criteria pollutant emissions associated with decommissioning would be less than the estimated project construction emissions, it is difficult to determine the impacts of project decommissioning due to uncertainties of air quality conditions, visibility, and federal and state regulatory standards in the future

4.2.12 Alternative C – Separate Transmission Towers within Same ROW

The Alternative C gen-tie line would parallel the approved Desert Sunlight gen-tie line, and would be located on separated towers within the same Desert Sunlight Solar Farm Project's ROW. The same number of towers in a nearly identical alignment to that of the Desert Sunlight Solar Farm project's gen-tie line would be constructed.

Construction

Construction activities required under Alternative C would be essentially the same as those required under Alternative B.

Direct Effects

Alternative C construction would require essentially the same equipment for the new tower installation in the same ROW as required under Alternative B. Therefore, Alternative C construction would generate essentially the same emissions as Alternative B and air quality impacts under Alternative C would be essentially the same as those impacts under Alternative B. Mitigation Measures AIR-1 (Fugitive Dust Control Plan) and MM AIR 2 (Control On-Site Emissions) would mitigate dust and NOx emissions from construction of Alternative C to the extent feasible.

Indirect Effects

There would be no indirect effects associated with Alternative C during construction.

Operation and Maintenance

DHSP operations and maintenance personnel would perform periodic maintenance of the gen-tie line, and no additional personnel would be required. Operation and maintenance of the gen-tie line would involve periodic inspection via helicopter or truck. The trans-mission lines would be maintained on an as-needed basis and would include maintenance of access roads and erosion/ drainage control structures.

Direct Effects

It is assumed that activity to support operation of Alternative 4 would include all necessary operation/maintenance vehicle trips required for Alternative C. No additional personnel would be required for Alternative C; therefore no impacts would occur.

Indirect Effects

No additional personnel would be required for Alternative C; therefore no impacts would occur.

Decommissioning

Decommissioning under Alternative C would be essentially to same as decommissioning under Alternative B.

Direct Effects

Required decommissioning activities and equipment under Alternative C would be similar to those described under Alternative B. Impacts during decommissioning of Alternative C would be essentially the same as decommissioning impacts under Alternative B.

Indirect Effects

There would be no indirect effects associated with Alternative C during decommissioning.

Mitigation Measures

The measures identified for Alternative 4 would also be implemented under Alternative C.

Residual Impacts and Unavoidable Adverse Effects

Alternative C would have temporary and unavoidable adverse NOx impacts during construction. Alternative C operation would not have any unavoidable adverse effects as the operation/maintenance activities required for Alternative C would be minimal. Decommissioning of Alternative C would require activities that are similar to construction, but criteria pollutants emissions would be less than construction emissions since it is likely that equipment engine technology would be more advanced and fuel would be cleaner at the time of decommissioning. While criteria pollutant emissions associated with decommissioning would be less than the estimated project construction emissions, it is difficult to determine the impacts of project decommissioning due to uncertainties of air quality conditions, visibility, and federal and state regulatory standards in the future,

4.2.13 Alternative D – Cross-Valley Alignment

Construction, operation, and maintenance of Alternative D would be identical to that described for Alternative C, except it would require slightly less temporary and permanent ground disturbance.

Construction

Construction activities required under Alternative D would be essentially the same as those required under Alternative B.

Direct Effects

Under Alternative D, construction equipment usage would be essentially the same as Alternative B; therefore impacts associated with air quality under Alternative D would be identical to those impacts under Alternative B. Mitigation Measures AIR-1 (Fugitive Dust Control Plan) and MM AIR 2 (Control On-Site Emissions) would mitigate dust and NOx emissions from construction of Alternative D to the extent feasible.

Indirect Effects

There would be no indirect effects associated with Alternative D during construction.

Operation and Maintenance

DHSP operations and maintenance personnel would perform periodic maintenance of the gen-tie line, and no additional personnel would be required. Operation and maintenance of the gen-tie line would involve periodic inspection via helicopter or truck. The trans-mission lines would be maintained on an as-needed basis and would include maintenance of access roads and erosion/ drainage control structures.

Direct Effects

It is assumed that activity to support operation of Alternative 4 would include all necessary operation/maintenance vehicle trips required for Alternative D. No additional personnel would be required for Alternative D; therefore no impacts would occur.

Indirect Effects

No additional personnel would be required for Alternative D; therefore no impacts would occur.

Decommissioning

Decommissioning under Alternative D would be essentially to same as decommissioning under Alternative B.

Direct Effects

Required decommissioning activities and equipment under Alternative D would be similar to those described under Alternative B; therefore impacts during Alternative D decommissioning would similar to decommissioning impacts under Alternative B.

Indirect Effects

There would be no indirect effects associated with Alternative D during decommissioning.

Mitigation Measures

The measures identified for Alternative 4 would also be implemented under Alternative D.

Residual Impacts and Unavoidable Adverse Effects

Alternative D would have temporary and unavoidable adverse NOx impacts during construction. Alternative D operation would not have any unavoidable adverse effects as the operation/maintenance activities required for Alternative D would be minimal. Decommissioning of Alternative D would require activities that are similar to construction, but criteria pollutants emissions would be less than construction emissions since it is likely that equipment engine technology would be more advanced and fuel would be cleaner at the time of decommissioning. While criteria pollutant emissions associated with decommissioning would be less than the estimated project construction emissions, it is difficult to determine the impacts of project decommissioning due to uncertainties of air quality conditions, visibility, and federal and state regulatory standards in the future.

4.2.14 Alternative E – New Cross-Valley Alignment

Construction, operation, and maintenance of Alternative E would be identical to that described for Alternative C, except it would require slightly less temporary and permanent ground disturbance. However, because it would require new access routes for the transmission line, Alternative D would require about 3,700 cubic yards of aggregate. Another 2,000 cubic yards of aggregate would be required for the gen-tie staging area, which would be located along the ROW.

Construction

Construction activities required under Alternative E would be essentially the same as those required under Alternative B.

Direct Effects

Under Alternative E, construction equipment usage would be essentially the same as Alternative B. Therefore impacts associated with air quality under Alternative E would be identical to those impacts under Alternative B. Mitigation Measures AIR-1 (Fugitive Dust Control Plan) and MM AIR 2 (Control On-Site Emissions) would mitigate dust and NOx emissions from construction of Alternative D to the extent feasible.

Indirect Effects

There would be no indirect effects associated with Alternative E during construction.

Operation and Maintenance

DHSP operations and maintenance personnel would perform periodic maintenance of the Gen-tie line, and no additional personnel would be required. Operation and maintenance of the proposed project gen-tie line would involve periodic inspection via helicopter or truck. The trans-

mission lines would be maintained on an as-needed basis and would include maintenance of access roads and erosion/drainage control structures.

Direct Effects

It is assumed that activity to support operation of Alternative 4 would include all necessary operation/maintenance vehicle trips required for Alternative E. No additional personnel would be required for Alternative E; therefore no impacts would occur.

Indirect Effects

No additional personnel would be required for Alternative E; therefore no impacts would occur.

Decommissioning

Decommissioning under Alternative E would be essentially to same as decommissioning under Alternative B.

Direct Effects

Required decommissioning activities and equipment under Alternative E would be similar to those described under Alternative B; therefore impacts during Alternative E decommissioning would similar to decommissioning impacts under Alternative B.

Indirect Effects

There would be no indirect effects associated with Alternative E during decommissioning.

Mitigation Measures

The measures identified for Alternative 4 would also be implemented under Alternative E.

Residual Impacts and Unavoidable Adverse Effects

Alternative E would have temporary and unavoidable adverse NOx impacts during construction. Alternative E operation would not have any unavoidable adverse effects as the operation/maintenance activities required for Alternative E would be minimal. Decommissioning of Alternative E would require activities that are similar to construction, but criteria pollutants emissions would be less than construction emissions since it is likely that equipment engine technology would be more advanced and fuel would be cleaner at the time of decommissioning. While criteria pollutant emissions associated with decommissioning would be less than the estimated project construction emissions, it is difficult to determine the impacts of project decommissioning due to uncertainties of air quality conditions, visibility, and federal and state regulatory standards in the future.

4.2.15 Cumulative Effects

Geographic Scope

The geographic scope for air quality cumulative impacts is a 6-mile radius for regionally based impacts and a one-mile radius for sensitive receptor impacts based on the nature and extent of these impacts. For purposes of this analysis, only projects that are scheduled concurrently in the

same area as the project are considered to be reasonably foreseeable future projects that could, in conjunction with the project, contribute to cumulative impacts.

Table 4.2-9. Cumulative Projects within the Geographic Scope of Cumulative Analysis

Resource Area / BLM Program Area	Geographic Area of Consideration	Elements to Consider	BLM Authorized and Other Known County Projects/Actions/Activities
Air Resources	Six-mile radius around project site	VOC, NOx, CO, PM10, and PM2.5	• Eagle Mountain Pumping Plant • Chuckwalla Valley Raceway • Eagle Mountain Pumped Storage Project • Desert Sunlight Solar Farm Project • Eagle Mountain Wind Project Met Towers • Sol Orchard • Silverado Power Project

Past, Present, and Reasonably Foreseeable Future Projects

There are two existing projects and five foreseeable projects within a 6-mile radius of the project site area. The existing projects include the Eagle Mountain Pumping Plant and the Chuckwalla Valley Raceway. The projects under development include Eagle Mountain Pumped Storage Project, Desert Sunlight Solar Farm Project, Eagle Mountain Wind Project Met Towers, Sol Orchard and Silverado Power Project.

Cumulative Effects Analysis

The timing for approval and construction of the Sol Orchard, and Eagle Mountain Wind Project Met Towers is not known, but it could overlap with part of the construction period for the DHSP. Construction of the Eagle Mountain Pumped Storage Project is expected to start in 2012 and would continue to occur over a 4-year period. Preliminary construction activities for the Desert Sunlight Solar Farm project started in September 2011, and its construction will continue to occur over a 2-year period. Therefore, construction of the DHSP would occur concurrently with construction of the Eagle Mountain Pumped Storage Project, the Desert Sunlight Solar Farm project, and possibly the Sol Orchard and Eagle Mountain Wind Project. Regarding projects further than 6-miles, it is anticipated that construction of the Eagle Mountain Landfill Project and Silverado Power Project would occur after DHSP's construction.

Analyses show that construction emissions during construction of the Desert Sunlight Solar Farm project would exceed the SCAQMD daily thresholds of significance for VOC, NOx, CO, PM10 and PM2.5 resulting in an unavoidable adverse impact (BLM 2011). Similarly, construction emissions from the Eagle Mountain Pumped Storage project are also expected to result in an unavoidable adverse NOx impacts. These construction emissions combined with those from the DHSP (Alternatives 4 through 7 and Alternatives C through E) would be expected to contribute to temporary adverse cumulative regional air quality impacts. Sensitive receptors would be affected by temporary and unavoidable adverse impacts from construction of the proposed project and other cumulative projects. Because construction at the proposed solar facility site would be well over 6,500 feet from the nearest residence and more than 1.8 miles from other identified sensitive receptors (residences, schools, and JTNP), and construction emissions would

cease upon operation, adverse effects of cumulative projects would not substantially overlap at sensitive receptors.

As described above, the nearest federal Class I area, JTNP, is located 1.8 miles away from the project site. It is expected that cumulative PM10 and PM2.5 emissions would result in a temporary unavoidable adverse impacts during construction, consequently impacts on visibility due to airborne dust would likely be adverse. However, the sources of emissions during construction would occur near the ground level, where dust would have a limited ability to notably affect distant vistas, and emissions would be widely dispersed across the project site. The ground level release and intermittent nature of construction sources ensures that the concentration near the JTNP would be much lower than the localized effects near the project site. Additionally, all cumulative projects are anticipated to avoid visible plumes as required by SCAQMD Rule 403 and implement additional mitigation measures where needed to control dust emissions. Therefore, the DHSP and other cumulative projects would not result in an adverse cumulative effect on visibility.

Once construction of projects under development and the DHSP is completed, operational cumulative impacts would include operation emissions of these projects in addition to operating emissions of existing cumulative sources. However, it should be noted that Kaiser Mine is no longer operational; therefore, it would not contribute to cumulative emissions. None of these facilities has a major stationary emission source. Additionally, four of these projects under development, like the proposed project, are solar energy facilities with no notable stationary emission sources. Due to the limited emission sources associated with these facilities, the cumulative impacts on visibility would be negligible and operation of the project would not result in an unavoidable cumulative adverse effect.

The No Action and No Project Alternatives (Alternatives 1, 2, 3, and A) would not contribute to any cumulative effects. In addition, Alternative B would not contribute to cumulative air quality effects, as the cumulative scenario assumes concurrent construction of the Desert Sunlight approved gen-tie and Alternative B conductor stringing using the same crew at the same time, with no additional work required for Alternative B beyond what is required for the Desert Sunlight gen-tie.

4.2.16 CEQA Considerations

CEQA Significance Criteria

The indicators listed below were used to determine the significance of potential impacts to air resources under CEQA. They are based on the significance criteria for air quality listed in the CEQA Environmental Checklist, Appendix G of the CEQA Guidelines, which state that a project would have a significant impact on air quality if it would:

AR-1 Conflict with or obstruct implementation of the applicable air quality plan;

AR-2 Violate any air quality standard or contribute to an existing or projected air quality violation;

AR-3 Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or State ambient air

quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors);

AR-4 Expose the public (especially schools, day care centers, hospitals, retirement homes, convalescence facilities and residences) to substantial pollutant concentrations;

AR-5 Create objectionable odors affecting a substantial number of people.

Specifically, implementation of the project would have a significant impact on air quality if it would exceed any of the SCAQMD thresholds of significance presented in Table 4.2-1.

CEQA Significance Determination

Alternatives 1, 2, 3, and A would not involve construction of the project or gen-tie line. These alternatives would have no impacts on air resources.

Alternative 4

AR-1 The SCAQMD is the agency with principal responsibility for air quality attainment planning in the portion of the MDAB surrounding the project site. The project site area is attainment for all federal air quality standards, so for the MDAB portion of SCAQMD's jurisdiction there are no federal planning requirements. However, this area is also non-attainment for state ozone and PM10 standards, where there are state planning requirements for ozone, but not PM10, attainment. SCAQMD has adopted 2007 Air Quality Management Plan (SCAQMD 2007) and 2003 Air Quality Management Plan (SCAQMD 2003) and these plans include recommendations for measures to control ROG/VOC and NOx emissions generated from stationary and mobile sources. The DHSP would implement Mitigation Measure AIR-2 to mitigate NOx emissions in conformance with the SCAQMD ozone plan. Implementation of Mitigation Measures AIR-2 would ensure that the project conforms to the SCAQMD Air Management Plan and that the DHSP would have less-than-significant impacts after mitigation.

AR-2 As shown in Table 4.2-3, construction emissions of VOC, CO, NOx, and PM10 during construction would exceed the SCAQMD thresholds even after implementing Mitigation Measures AIR-1 and AIR-2, and these emission levels could cause localized exceedances, or contribute significantly to existing exceedances, of the State or federal air quality standards. Therefore, the proposed project would have temporary significant and unavoidable NOx and PM10 impacts during construction.

AR-3 Implementation of Mitigation Measures AIR-1 and AIR-2 would reduce fugitive dust emissions and engine NOx emissions. However, as shown above in Table 4.2-3 the daily construction VOC, CO, NOx, PM10 and PM2.5 emissions would exceed the SCAQMD thresholds, resulting in a cumulatively considerable net increase of VOC, CO, NOx, PM10 and PM2.5 during project construction. Therefore, the DHSP would have temporary significant and unavoidable NOx and PM10 impacts during construction.

AR-4 Sensitive receptors would be affected by emissions generated during the project construction as construction emissions for VOC, CO, NOx, and PM10would exceed the

SCAQMD threshold of significance as presented in Table 4.2-3. The high level of VOC, CO, NOx, and PM10 emissions would have the potential to create temporary unavoidable significant impacts; however, since construction activity at the proposed solar facility site would be well over 6,500 feet from the nearest residence, impacts on sensitive receptors would be less than significant. These impacts on residential receptors would vary depending on the location, level, and type of activity, the silt content of the soil, and the prevailing weather. The nearest boundary of the JTNP is located 1.8 miles to the northeast, which would be a sufficient distance from the project site to ensure that users of the JTNP do not experience significant localized concentrations of emissions.

AR-5 The project would not include any notable source of odors except for use of diesel-fueled construction equipment and small quantities of coatings that include organic compounds. Construction odors would be temporary, would be limited by mandatory use of ultra-low sulfur diesel fuel, and would only occur within the project site, and so would not negatively affect a substantial number of people. Therefore, the odor impacts from the project construction are less than significant.

Operation and Maintenance

AR-1 The DHSP does not include any major stationary emission sources and only requires minimal operation activities. In addition, the DHSP would implement Mitigation Measures AIR-3 and AIR-4 to mitigate NOx and particulate matter emissions during operation. Therefore, the operation of the project would not conflict with or obstruct implementation of the SCAQMD air quality plans.

AR-2 As shown in Table 4.2-5, operation emissions for all criteria pollutants would remain well under the applicable thresholds of significance. Such levels of emissions should not cause localized exceedances, or contribute significantly to existing exceedances, of the State or federal air quality standards. Therefore, the proposed project would have less-than-significant impacts on air quality standard attainment during operation.

AR-3 Operation of the DHSP would result in substantially lower emissions than project construction and would be well below the SCAQMD thresholds of significance (see Table 4.2-5). Therefore, project's operation emissions would not result in cumulatively considerable net increases of nonattainment pollutants and would have less-than-significant impacts to regional air quality.

AR-4 As shown in Table 4.2-5 and Table 4.2-6, operation emissions of the DHSP are minimal after implementation of mitigation measures AIR-3 and AIR-4, so the project would have less-than-significant impacts to area receptors during operation.

AR-5 Operation of the DHSP would not include any notable sources of odors. Therefore, the odor impacts from the project operation are less than significant.

Decommissioning

AR-1 It can be assumed that the decommissioning activities will be conducted in a manner that would conform to the requirements of applicable air quality plans, if any exist, at the time of project decommissioning. However, applicable regulatory standards and

air quality plans are likely to be more stringent than current standards and plans, and overall air quality may be worse in 30 years if future development proceeds.

AR-2 The magnitude of decommissioning emissions are expected to be significantly less than those estimated for project construction since decommissioning would occur after at least 30 years of operation, and it is expected that on-road and off-road equipment engine technology would be far more advanced and cleaner than is currently the case. Additionally, the level of activity needed to decommission the solar panels is less than the level of activity needed to construct the solar panels and can be done at a more leisurely pace than construction. Although the ambient air quality attainment status for the project area and visibility conditions at the time of project decommissioning are unknown, decommissioning emissions of the DHSP are not expected to cause or significantly contribute to any air quality violations, and would have less-than-significant impacts on air quality standard attainment.

AR-3 Due to the reduced activity, and expected reduced emission profile of vehicles when decommissioning would occur, is anticipated that decommissioning emissions of the DHSP can be kept below the SCAQMD CEQA significance thresholds. Therefore, project's decommissioning emissions would not result in cumulatively considerable net increases of nonattainment pollutants and would have less-than-significant impacts to regional air quality.

AR-4 Any receptors located near to the DHSP would have increased air pollutant exposures from project decommissioning; however, as noted above, the level of emissions during decommissioning are expected to be substantially lower than those from project construction, and during decommissioning the project owner would have to comply with District rules and regulations and imposed Mitigation Measure AIR-3 that address fugitive dust control. Therefore, the air quality impacts resulting from project decommissioning to the public, including sensitive receptors, are expected to be less than significant.

AR-5 Decommissioning activity would not include any notable source of odors except for use of diesel-fueled equipment within the project site. Odors would not negatively affect a substantial number of people. Therefore, the odor impacts from the project decommissioning would be less than significant.

Alternative 5

Significance Criteria AR-1 through AR-5 would be the same for Alternative 5 as for Alternative 4 as discussed in Section 4.2.7. The same mitigation measures would apply as appropriate.

Alternative 6

Significance Criteria AR-1 through AR-5 would be the same for Alternative 6 as for Alternative 4 as discussed in Section 4.2.8. The same mitigation measures would apply as appropriate.

Alternative 7

Significance Criteria AR-1 through AR-5 would be the same for Alternative 7 as for Alternative 4 as discussed in Section 4.2.8. The same mitigation measures would apply as appropriate.

Alternative B

Significance Criteria AR-1 through AR-5 would be the essentially same for Alternative B as for Alternative 4 as discussed in Section 4.2.11. However, for Alternative B, mitigated maximum daily emissions would be below the thresholds for all criteria pollutants except for daily NOx emissions. Therefore for construction emissions, Alternative B would result in temporary significant and unavoidable NOx impacts during construction for AR-2 and AR-3 and would not result in temporary significant and unavoidable PM10 impacts for AR-2 and AR-3. The same mitigation measures would apply as appropriate.

Alternative C

Significance Criteria AR-1 through AR-5 would be essentially the same for Alternative C as for Alternative B as discussed in Section 4.2.12. The same mitigation measures would apply as appropriate.

Alternative D

Significance Criteria AR-1 through AR-5 would be essentially the same for Alternative D as for Alternative B as discussed in Section 4.2.13. The same mitigation measures would apply as appropriate.

Alternative E

Significance Criteria AR-1 through AR-5 would be essentially the same for Alternative E as for Alternative B as discussed in Section 4.2.14. The same mitigation measures would apply as appropriate.

Cumulative Impacts

Cumulative impacts are described in Section 4.2.15. As discussed therein, the contribution of the proposed project and alternatives to a cumulative air quality impact would be less than considerable under CEQA.

4.3 BIOLOGICAL RESOURCES – VEGETATION

4.3.1 Methodology for Analysis

This analysis is based on information from the focused rare plant surveys, vegetation mapping, reconnaissance surveys, and jurisdictional delineations conducted for the proposed project and alternatives and survey results from the adjacent Desert Sunlight Solar Farm Project, as well as information found in the California Natural Diversity Database (CNDDB), California Native Plant Society (CNPS) Online Inventory of Rare and Endangered Plants (8th Edition), Consortium of California Herbaria (CCH), and lists of special-status species for the region (see Chapter 3.3 for details).

Impact analyses typically characterize effects to vegetation communities as temporary or permanent. Permanent impacts generally refer to areas to be paved or otherwise precluded from most natural habitat function throughout the life of a proposed project. Temporary impacts generally refer to areas to be disturbed during project construction, but allowed to return to a more natural condition after initial construction disturbance or actively revegetated. Mitigation ratios for temporary impacts may be less than those for permanent impacts, especially if revegetation or ecological restoration is employed. In desert ecosystems, the interpretation of permanent and temporary impacts needs to reflect the slow recovery rates of native plant communities. Natural recovery rates from disturbance in desert ecosystems depend on the nature and severity of the impact. For example, creosote bushes can re-sprout a full canopy within five years after crushing by heavy vehicles (Gibson et al. 2004), whereas more severe damage involving vegetation removal and soil disturbance can take from 50 to 300 years for partial recovery and complete ecosystem recovery may require over 3,000 years (Lovich and Bainbridge 1999). In this analysis, an impact that might be considered temporary in other parts of California will be considered long-term or permanent due to these very slow natural recovery rates.

Direct and indirect impacts of each action alternative to vegetation and jurisdictional areas are discussed in Sections 4.3.4 through 4.3.15. The analysis of direct and indirect impacts covers construction, operations and maintenance (O&M), and decommissioning for each action alternative. Direct effects include the direct or immediate effects of the project on a species or its habitat. Examples of direct impacts to vegetation and jurisdictional areas include damage to or removal of special-status plants; loss or degradation of native plant communities or jurisdictional areas; and interference with photosynthetic processes and/or plant reproduction from dust or shading. Indirect effects include those effects that are caused by or will result from the project and are later in time or farther removed in distance, but are still reasonably certain to occur. Examples of indirect effects to vegetation and jurisdictional areas include erosion, sedimentation, and introduction of invasive species by various vectors or conditions that compete with native species and can result in habitat degradation.

4.3.2 Summary of Impacts

A summary of the overall acreages of disturbance by plant community and jurisdictional areas associated with each alternative is provided in Tables 4.3-1 and 4.3-2. Acreages calculated for impacts were based on the best project information available at the time of publication of this document. Minor changes to these acreages may occur as the project undergoes final engineering, but substantial changes to acreages reported below would not be expected. These acreages

are based on information provided by Applicant regarding construction of each project component, and mapping of vegetation and jurisdictional areas described in Section 3.3.

Table 4.3-1. Summary Comparison of Action Alternatives – Solar Project Site Alternatives

	Permanent and Long-Term Impacts (acres)			
Resource	Alternative 4: Proposed Solar Project	Alternative 5: Solar Project Excluding WHMA	Alternative 6: Reduced Footprint Solar Project	Alternative 7: High-Profile Reduced Footprint Solar Project
Creosote Bush Scrub (Sonoran Desert Scrub)	1,026	980	944	944
Blue Palo Verde–Ironwood Woodland (Desert Dry Wash Woodland)	180	179	98	98
Previously Disturbed Areas	2	2	2	2
Total Permanent and Long-Term Disturbance*	1,208	1,161	1,044	1,044
CDFG Jurisdictional Streambeds	113	110	79	79
Total CDFG Jurisdictional Areas	258.5	254.4	163.5	163.5

*CDFG jurisdictional streambeds overlap with plant communities; therefore, total is not a sum of the above acreages.

Table 4.3-2. Summary Comparison of Action Alternatives – Gen-Tie Alternatives[1]

	Permanent and Long-Term Impacts (acres)			
Resource	Alternative B: Proposed Gen-Tie – Shared Towers	Alternative C: Separate Transmission Towers Within Same ROW	Alternative D: Cross-Valley Alignment	Alternative E: New Cross-Valley Alignment
Creosote Bush Scrub (Sonoran Desert Scrub; Bajada/Alluvial Landforms)	41	41	20	5
Blue Palo Verde–Ironwood Woodland (Desert Dry Wash Woodland)[2]	51	51	39	60
Previously Disturbed Areas	0	0	27	0
Creosote Bush Scrub (Sonoran Desert Scrub; Partially Stabilized Sandfields)	0	0	0	13
Active Sand Dunes	0	0	0	7
Total Permanent and Long-Term Impacts	92	92	86	85

1 - Estimated acreage, based on proportion of alignment within each vegetation type, and the estimated disturbance acreage provided by the Applicant for each alternative.

2 - Blue Palo Verde–Ironwood Woodlands also meet CDFG jurisdictional criteria as riparian vegetation adjacent to jurisdictional streambeds.

4.3.3 Applicant Measures

The Applicant has provided several measures as part of the project description that would be implemented during construction, operation, and/or decommissioning to reduce potential impacts to vegetation. In some cases, mitigation measures further clarify or expand on AM reporting requirements, timing of implementation, or other details where appropriate. Where there is a conflict between provisions of the mitigation measures imposed and the following AMs, the mitigation measures take precedence.

Applicant Measures identified by the Applicant to reduce impacts to vegetation include the following:

AM BIO-1 **Habitat Compensation Plan**. A Habitat Compensation Plan is being prepared and will be implemented by the Applicant to compensate for the loss of creosote desert scrub, desert dry wash woodland, and jurisdictional resources. Compensation will be accomplished by acquisition of mitigation land or conservation easements or by providing funding for specific land acquisition, endowment, restoration, and management actions under one of several programs, such as the recently approved mitigation program created by AB 13. The Habitat Compensation Plan will be reviewed and approved by BLM, United States Fish and Wildlife Service (USFWS), and the California Department of Fish and Game (CDFG). The precise details of the mitigation, including mitigation ratios, will be established in the BLM Right-of-Way (ROW) grant, USFWS Biological Opinion, and any CDFG 2081 Incidental Take Permit or CDFG 2080.1 Consistency Determination.

AM BIO-2 **Integrated Weed Management Plan.** A Draft Integrated Weed Management Plan (IWMP) will be prepared pursuant to BLM's Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States (BLM 2007) and the National Invasive Species Management Plan (NISC 2008), and will be implemented by the Applicant to reduce the potential for the introduction of invasive species during construction, operation and maintenance, and decommissioning of the project. The draft plan will be reviewed and approved by the BLM.

AM BIO-3 **Pre-construction Surveys for Special-Status Plant Species and Cacti.** Before construction, the Applicant will stake and flag the construction area boundaries, including the construction areas for the solar farm site and gen-tie line; construction laydown, parking, and work areas; and the boundaries of all temporary and permanent access roads. A BLM-approved biologist will then survey all areas of proposed ground disturbance for special-status plant species and cacti during the appropriate blooming period for those species having the potential to occur in the construction areas. All special-status plant species and cacti observed will be flagged for transplantation. All cacti observed will be flagged for transplantation and special-status plant species observed will be flagged for salvage.

AM BIO-4 **Worker Environmental Awareness Program (WEAP).** The Applicant will implement a WEAP to educate on-site workers about sensitive environmental issues associated with the project. The WEAP will be administered to all on-site personnel including surveyors, construction engineers, employees, contractors, contractor's employees, supervisors, inspectors, subcontractors, and delivery personnel. The program will be implemented during site mobilization, ground disturbance, grading, construction, operation, and closure. BLM will be responsible for ensuring that each construction worker at the site, throughout the duration of construction activities, receives the above training.

AM BIO-5 **Vegetation Resources Management Plan.** The Applicant will prepare and implement a Vegetation Resources Management Plan that contains the following components:

- A *Vegetation Salvage Plan* which discusses the methods that will be used to transplant cacti present within the project locations following BLM's standard operating procedures, as well as methods that will be used to transplant special-status plant species that occur in the project locations if feasible.
- A *Restoration Plan* which discusses the methods that will be used to restore Creosote Bush Scrub and Desert Dry Wash Woodland Habitat that is temporarily disturbed by construction activities.
- The *Vegetation Salvage Plan* and *Restoration Plan* will specify success criteria and performance standards. BLM will be responsible for reviewing and approving the plan and for ensuring that the Applicant implements the plan including maintenance and monitoring required in the plan.

4.3.4 Alternative 1 – No Action (No Plan Amendment)

Under Alternative 1, the proposed DHSP would not be approved by the BLM, and BLM would not amend the California Desert Conservation Area (CDCA) Plan. As a result, the proposed solar energy project would not be constructed on the project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no ground disturbance. As a result, no impacts from the DHSP would occur and the project sites would continue to be affected by current uses.

4.3.5 Alternative 2 – No Project Alternative (with Plan Amendment to Find the Site Suitable for Solar Energy Development)

Under Alternative 2, the proposed Desert Harvest Solar Project (DHSP) would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site available for future solar energy development. As a result, the DHSP would not be constructed on the project site and BLM would manage the site consistent with the amended land use designation in the CDCA Land Use Plan. No impacts from the DHSP would occur.

4.3.6 Alternative 3 – No Project Alternative (with Plan Amendment to Find the Site Unsuitable for Solar Energy Development)

Under Alternative 3, the proposed Desert Harvest Solar Project (DHSP) would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site unavailable for future solar energy development. As a result, the DHSP would not be constructed on the project site and BLM would manage the site consistent with the amended land use designation in the CDCA Land Use Plan. No impacts from the DHSP would occur.

4.3.7 Alternative 4 – Proposed Solar Project

Alternative 4 is the Applicant's proposed solar project, which would be a 150-MW, nominal capacity, alternating current (AC), solar photovoltaic (PV), energy-generating project. The project consists of a main generation area, O&M facility, on-site substation, switchyard, site security,

on-site water-storage ponds (during the construction phase), one on-site evaporation pond, a well, and a 220-kilovolt (kV) generation interconnection line. The project would be located on 1,208 acres, and would be comprised of two separate parcels separated by a desert wash. The northern parcel would be 1,053 acres and the southern parcel would be 155 acres. Figure 2-2 in Appendix A illustrates Alternative 4.

Construction

Project construction, including construction methods, equipment, scheduling, and phasing, are described in Chapter 2. Most construction impacts to vegetation resources would occur during Phases 2 and 3 (September 2013 to May 2015), which would include site fencing, installation of temporary power, site grading and preparation, and other facilities.

Construction would generally occur between 7 a.m. and 7 p.m., Monday through Friday, but construction during additional hours may be necessary at times.

Direct Effects

Construction activities associated with Alternative 4 would directly affect vegetation, special-status plants, and state jurisdictional resources through the long-term and permanent loss and degradation of native vegetation and its habitat values, loss of special-status plants, and loss or alteration of state jurisdictional streambeds and associated habitat values. These effects are discussed in detail below, and mitigation measures to reduce the severity of these effects are presented at the end of this section.

Native Vegetation Including Sensitive Natural Communities. Site preparation and construction at the proposed solar facility would consist of removing vegetation where necessary, such as along the access roads, and crushing or mowing vegetation taller than 18 inches throughout the remainder of the site. It is the Applicant's goal to minimize vegetation removal and soil surface disturbance during construction. Annual plants and smaller perennials may remain in place where compatible with project construction. Overall impacts of project construction would cause substantial degradation to native vegetation and wildlife habitat. Project construction would result in permanent and long-term adverse impacts to 1,206 acres of natural vegetation, including 1,026 acres of Creosote Bush Scrub (Sonoran Desert Scrub) and 180 acres of Blue Palo Verde–Ironwood Woodland (Desert Dry Wash Woodland).

Construction traffic and related activities would cause increased soil erosion on the site. Aeolian (wind) transport of dust and sand can degrade soil and vegetation over a widening area, and would affect off-site vegetation (Okin et al. 2001). Dust can have deleterious physiological effects on plants and may affect their productivity and nutritional qualities (Sharifi et al. 1997). Windblown dust and sand can kill plants by burial and abrasion, interrupt natural processes of nutrient accumulation, and damage off-site soil resources. The destruction of plants and soil crusts by windblown sand and dust exacerbates the erodibility of the soil and accelerates the loss of nutrients (Okin et al. 2001).

The project's direct adverse impacts to vegetation would be substantial, but can be reduced through implementation of required Mitigation Measures VEG-1 through MM VEG-6 (the full text of all mitigation measures is presented below in a section entitled "Mitigation Measures"). In combination, these measures would ensure that:

- project impacts to biological resources are minimized and do not exceed the impacts described herein;
- all such impacts are documented and reported to resource agencies;
- communication among the project owner and resource agencies is maintained during construction, O&M, and decommissioning phases via the Designated Biologist;
- workers on the site are informed of the requirements for protection of biological resources;
- adverse impacts to soils and vegetation are mitigated to the extent feasible; and
- loss of vegetation and habitat is compensated by permanent protection and management of comparable habitat off site.

These measures are expected to effectively mitigate the majority of the project's adverse impacts to these resources, though some residual impacts would remain (see below).

- Mitigation Measure VEG-1 (Assign a Designated Biologist and Biological Monitors) would require the project owner to assign qualified biologists to monitor project construction, prepare monitoring reports for the project owner and resource agencies, and maintain resource agency contact throughout the construction phase of the project.
- Mitigation Measure VEG-2 (Conduct Biological Monitoring and Reporting during project Construction, Operations, and Decommissioning) describes the responsibilities and authority of the Designated Biologist and Biological Monitor with respect to vegetation, habitat, special-status species, reporting, and other aspects of the monitoring program.
- Mitigation Measure VEG-3 (Prepare and Implement a Worker Environmental Awareness Program [WEAP]), requires an education program to inform workers on the site of biological resource values, the specific policies and requirements in place to protect those values, and their responsibilities for protection of biological resource values.
- Mitigation Measure VEG-4 (Minimize Construction-Related Impacts) requires minimization of all construction sites, to avoid unnecessary damage to biological resources, including vegetation and habitat.
- Mitigation Measure VEG-5 (Prepare and Implement a Vegetation Resources Management Plan) requires vegetation management or revegetation of disturbed areas within the project footprint, as compatible with project operation and maintenance. Note that all disturbances to soils and vegetation are analyzed here as long-term or permanent impacts and off-site compensation is required in MM VEG-6. Therefore, the goal of the revegetation plan will be to prevent further degradation of disturbed sites, but not necessarily to restore pre-disturbance habitat values.
- Mitigation Measure VEG-6 (Provide Off-Site Compensation for Impacts to Vegetation and Habitat) requires acquisition and management of off-site vegetation and habitat in perpetuity to offset the permanent loss of vegetation and habitat on the project site. Consistent with the NECO Plan requirements, impacts to Creosote Bush Scrub (Sonoran Desert Scrub) would be compensated at a 1:1 ratio; impacts to Blue Palo Verde–Ironwood Woodland (Desert Dry Wash Woodland) would be compensated at a 3:1 ratio; and impacts to designated wildlife management areas would be compensated at increased ratios (see Section 4.4). The Blue Palo Verde–Ironwood Woodland (Desert Dry Wash Woodland) is a special-status plant community

that provides habitat elements and structure not available in surrounding Creosote Bush Scrub (Sonoran Desert Scrub). This Woodland is closely associated with the beds and banks of state-jurisdictional streambeds and is, in effect, the riparian vegetation of regional episodic hydrologic systems. The Applicant is currently working with Wildlands Inc. to develop a suitable compensation strategy to address the resources and ratios described in MM VEG-6 (see Appendix C.12).

Special-Status Plants. Project construction would remove Emory's crucifixion thorn (at least16 individual plants occur within the project boundaries, but not all individuals would be directly impacted by project facilities), Utah vine milkweed (one individual reported in 2010, not relocated in 2011), and desert unicorn-plant (two individuals at one location, located in 2011). The natural history of desert unicorn-plant (perennial herb; sprouts above-ground every few years in response to warm season rains) makes it likely that additional, undocumented locations exist on the site. Thus, construction of Alternative 4 could affect additional desert unicorn-plant locations. Impacts to special-status plants would be adverse, but only those impacts ranked as California Rare Plant Rank (CRPR) 1 or 2 would warrant mitigation. Emory's crucifixion thorn on private lands may be subject to the provisions of the California Desert Native Plants Act. Emory's crucifixion thorn is ranked as CRPR 2, and the other two species are CRPR 4. None of the three plant taxa are BLM Sensitive Species (see Section 3.3). Implementation of Mitigation Measure VEG-7 (Mitigate Direct Impacts to Special-Status Plants) would reduce project impacts to Emory's crucifixion thorn by requiring the project owner to either (1) salvage individual plants from the site prior to construction; (2) introduce greenhouse-raised plants into suitable off-site habitat; or (3) to provide compensation lands with extant Emory's crucifixion thorn. The project's impacts to the two other species (both CRPR 4), while adverse, would not warrant further mitigation. The likelihood for success of Emory's crucifixion thorn salvage or propagation is unknown, and any such efforts will be considered experimental in nature. However, based on the conservation status of this and other special-status plants on the site, MM VEG-7, in combination, with other measures, is expected to appropriately minimize or mitigate the majority of the project's adverse impacts to special-status plants, though some residual impacts would remain (see below).

State-Jurisdictional Streambeds. Construction of the project would adversely impact 113 acres of state-jurisdictional streambeds. This includes 34.5 acres within Blue Palo Verde–Ironwood Woodland (Desert Dry Wash Woodland), and 78.5 within Creosote Bush Scrub (Sonoran Desert Scrub). Construction would also impact 180 acres of the adjacent riparian vegetation (i.e., Blue Palo Verde–Desert Ironwood Woodland, or Desert Dry Wash Woodland). Total impacts to jurisdictional areas are calculated as the sum of mapped woodlands (180 acres) plus the acreage of jurisdictional streambeds mapped outside those woodlands (78.5 acres), or 258.5 acres total. These streambeds convey water and sediment to stream channels and their associated vegetation and habitat (e.g., Desert Dry Wash Woodland), both on the project site, and off site downstream. Impacts to state-jurisdictional streambeds would require the project owner to obtain a Lake and Streambed Alteration Agreement from the CDFG. The USACE has issued its jurisdictional determination, concluding that no waters of the United States occur on the proposed solar facility site (Appendix C.11. [USACE May 29 2012]). The Colorado River Basin Regional Water Quality Control Board (Region 7) has indicated that 401 Water Quality Certification is not necessary (Appendix C.11. [Jay Mirpour email June 26 2012]). In addition, no wetlands occur on the project site. As described in detail in Section 3.3.9, although one area

in the solar facility site is identified as a National Wetland Inventory (NWI) wetland, higher resolution project-specific surveys determined that the waters on site are classified as non-wetland State waters according to multiple legal and scientific criteria.

The proposed project does not include diversion channels, detention basins, or other substantial alterations to the existing surface hydrology. Water and sediment would be conveyed down-slope, across the site, by sheet flow or within channels where topography remains present after site preparation and project construction. However, surface flow patterns, velocities, and sediment loads may be altered throughout the site by solar panel foundations, access roads, and other project features. Native vegetation would be removed or degraded from these streambed and woodland areas and would no longer provide suitable habitat for most native wildlife species. Altered surface flows may affect downstream vegetation by altering water or sediment availability. These impacts would be offset by implementing Mitigation Measures VEG-1 through MM VEG-6, described above. In addition, implementation of Mitigation Measure VEG-8 (Implement Best Management Practices to Minimize Impacts to Jurisdictional Areas) would minimize adverse effects of construction activities to jurisdictional streambeds both on site and off site. The project owner will be required by California Fish and Game Code Section 1600 to obtain a Lake and Streambed Alteration Agreement from the CDFG prior to altering streambeds on the project site. Mitigation Measure WAT-1 requires demonstration of compliance with any applicable permit conditions from CDFG, USACE, and Regional Water Quality Control Board. Implementation of these measures, in combination with other measures, is expected to effectively mitigate the majority of the project's adverse impacts to state-jurisdictional streambeds, though some residual impacts would remain (below).

Indirect Effects

In addition to the direct impacts to vegetation, project construction would have several indirect impacts to native vegetation, special-status plants, and jurisdictional streambeds off site, including introduction or spread of invasive weeds and, potentially, depletion of ground water and diversion of surface water flows and subsequent effects to groundwater-dependent vegetation.

Invasive Weeds. Invasive weeds can displace native species, supplant food plants or other wildlife habitat elements (e.g., cover), alter natural habitat structure and ecological function, alter natural wildfire patterns, or displace special-status plant occurrences and habitat. The spread of invasive plants is an important threat to biological resources in the California desert. Human activities, including the proposed project, can affect weed distribution and abundance in two ways: they can introduce new weed species to an area, and they can facilitate propagation and spread of weeds already present.

New weed introductions occur when seeds are inadvertently introduced to a site, most often with mulch, hay bales, or wattles used for erosion control, or when they are carried on equipment tires from off site. Invasive weeds generally spread most readily in disturbed, graded, or cultivated soils, including soils disturbed by construction equipment. Weeds are relatively low in abundance and diversity throughout the proposed project area. However, construction of the proposed project would be expected to introduce or facilitate the spread of invasive non-native plants, including weeds noted on the site during field surveys (Section 3.3) or weeds new to the area. Please see Appendix B (**Summary of Invasive Plant Species Occurring within the DHSP Study Area**) of the Integrated Weed Management Plan for the DHSP located in

Appendix C-10 of this FEIS, for a complete assessment of each invasive plant species known from the project site. The assessment includes site-specific impacts on biological resources, as well as treatment schedule and control options for each species.

Herbicides pose risks to terrestrial and aquatic vegetation. Most aquatic herbicides, and several terrestrial herbicides, are non-selective and could adversely impact non-target vegetation. Accidental spills and herbicide drift from treatment areas could be particularly damaging to non-target vegetation on BLM land, and crop plants or other vegetation found on privately-owned lands near treatment areas. The project's Integrated Weed Management Plan (IWMP; see Appendix C-10) includes specific measures to avoid application at project perimeters, in the vicinity of native vegetation, or special status plants, and to avoid overspray or spillage in any areas. In addition, the Draft IWMP describes proposed usage and formulations of herbicides at the DHSP. Use of herbicides would be in accordance with the measures and standard operating procedures in the BLM's 2007 *Final Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement* (PFEIS). As described in Chapter 1, Section 1.9.1, the DHSP EIS is tiered to the Herbicide PFEIS. Complying with the measures and standard operating procedures in the Herbicide PFEIS, MM PHS-9, as well as other limitations described in the Draft IWMP, would avoid potential adverse effects of herbicides to native vegetation and special-status plants. Risks to vegetation from proposed herbicides would be similar to, or less than, risks from currently-available herbicides. Buffer zones would be used to reduce the risks to vegetation from herbicide treatments.

MM VEG-9, in combination, with other measures, is expected to effectively mitigate the project's adverse impacts to biological resources that would result from introduction or spread of invasive weeds.

Hydrology and Groundwater. Project construction could affect off-site vegetation, particularly the Blue Palo Verde–Desert Ironwood Woodlands (Desert Dry Wash Woodland) downstream of the project footprint, by altering water quality, hydrology, and possibly, by altering depth to groundwater. If pollutants, silt, or other materials are carried off-site by intermittent stream flows, they could be deposited in downstream washes or could enter the soil or groundwater, where they could adversely affect native woodland vegetation. Implementation of a Surface Water Protection Plan (SWPP; see Section 4.22, Water Resources) and Mitigation Measure VEG-8 (Implement Best Management Practices to Minimize Impacts to Jurisdictional Areas) during construction would reduce these impacts.

In addition, groundwater pumping during construction of the project could lower local groundwater levels. Groundwater pumping for agriculture has caused loss of phreatophytic (groundwater-dependent) woodlands in Arizona (Jackson and Comus 1999). Depending on the rate and extent of groundwater drawdown and on the ability for groundwater-dependent plants to adjust by extending their root systems, groundwater pumping could cause mortality of desert dry wash woodland trees (desert ironwood and blue palo verde). This potential adverse impact would be minimized by Mitigation Measure VEG-10 (Prepare and Implement a Desert Dry Wash Woodland Monitoring and Reporting Plan), which would require the project owner to monitor groundwater levels and plant health and vigor in adjacent desert dry wash woodland areas. If plant stress or mortality is determined to be related to project activities, then the project owner will either refrain from pumping, reduce groundwater pumping to allow for recovery of the

groundwater table, or provide additional habitat compensation as described in MM VEG-10. MM VEG-10, in combination, with other measures, is expected to effectively mitigate the majority of the project's adverse impacts to off-site Desert Dry Wash Woodland that could result from groundwater pumping, though some residual impacts would remain (below).

Operation and Maintenance

O&M activities associated with Alternative 4 could directly affect vegetation, special-status plants, and jurisdictional resources due to long-term habitat alteration by installation of the solar panels and other facilities, dust and other soil disturbances, management of vegetation on-site for operations of the facility, and ongoing potential to introduce new weed species or facilitate the spread of existing species.

Direct Effects

Native Vegetation Including Sensitive Natural Communities. Project vegetation management during facilities operations would consist of mowing, weeding, or other vegetation control for compatibility with facility operations. In addition, altered plant habitat (particularly shade beneath the solar panels and compacted soils on maintenance and access roads) will further eliminate or severely alter native shrublands. Overall impacts of these O&M procedures would prevent recovery of native vegetation and wildlife habitat throughout the life of the project. Vegetation throughout the site would remain degraded from natural conditions throughout the life of the project, with reduced abundance, cover and height of native shrubs; reduced overall vegetation cover; and increased relative cover of non-native species. These long-term impacts to vegetation can be reduced through implementation of required Mitigation Measures VEG-1 through MM VEG-6, as summarized above (full text is presented below). These measures would limit the initial disturbance areas and avoid off-site habitat degradation; require vegetation management on-site to minimize adverse off-site impacts, and require off-site compensation for habitat lost or degraded throughout the life of the project.

Special-Status Plants. Project O&M would not affect special-status plants on site after those plants are removed or damaged during initial construction. However, vegetation management for facility operation could cause accidental off-site impacts, due to herbicide drift or off-site hydrology impacts. Mitigation Measures VEG-5 (Prepare and Implement a Vegetation Resources Management Plan) and MM VEG-9 (Prepare and Implement an Integrated Weed Management Plan) would minimize these impacts throughout the life of the project.

State-Jurisdictional Streambeds. O&M of the project would maintain streambeds and associated habitat values throughout the site in degraded condition. The larger streambeds would continue to convey water and sediment downslope, but would no longer provide suitable habitat for most native wildlife species. These impacts would be offset by implementing Mitigation Measures VEG-1 through MM VEG-6 as summarized above. In addition, implementation of Mitigation Measure VEG-8 (Implement Best Management Practices to Minimize Impacts to Jurisdictional Areas) would minimize adverse effects of O&M activities to jurisdictional streambeds both on site and off site.

Indirect Effects

In addition to the direct impacts to vegetation, project O&M could have several indirect impacts to native vegetation, special-status plants, and jurisdictional streambeds off-site, including introduction or spread of invasive weeds and, potentially, depletion of groundwater and subsequent effects to groundwater-dependent vegetation.

Invasive Weeds. Operation of the solar facility would be expected to introduce or facilitate the spread of invasive non-native plants, including weeds noted on the site during field surveys (Section 3.3) or weeds new to the area. This potential impact would be minimized by Mitigation Measure VEG-9 (Prepare and Implement an Integrated Weed Management Plan).

Hydrology and Groundwater. Surface flow alterations that result from project construction would continue during the O&M phase, over the life of the project. Project O&M could affect off-site vegetation, particularly the Blue Palo Verde–Desert Ironwood Woodlands (Desert Dry Wash Woodland) downstream of the project footprint, by altering water quality, hydrology, and possibly, by altering depth to groundwater. If pollutants, silt, or other materials are carried off-site by intermittent stream flows, they could be deposited in downstream washes or could enter the soil or groundwater, where they could adversely affect native woodland vegetation. Implementation of Mitigation Measure VEG-8 (Implement Best Management Practices to Minimize Impacts to Jurisdictional Areas) during construction and during O&M would reduce these impacts.

In addition, groundwater pumping during project O&M could lower local groundwater levels. Depending on the rate and extent of groundwater drawdown and on the ability for groundwater-dependent plants to adjust by extending their root systems, groundwater pumping could cause mortality of desert dry wash woodland trees (desert ironwood and blue palo verde). This potential impact would be minimized by Mitigation Measure VEG-10 (Prepare and Implement a Desert Dry Wash Woodland Monitoring and Reporting Plan), which would require the project owner to monitor groundwater levels and plant health and vigor in adjacent desert dry wash woodland areas and to implement remedial measures if the monitoring identifies impacts.

Decommissioning

The proposed methods of decommissioning of the solar facility are summarized in Chapter 2. The expected operational lifetime of the project is 30 years; however, the actual life of the project could be longer or shorter. When permanent closure is appropriate, a decommissioning plan will be prepared and submitted to the BLM for review and approval. Closure strategies may include temporary “mothballing;” removing old facilities and upgrading to newer solar technology; or complete removal of equipment and restoration of the land to BLM-approved specifications. Fully decommissioning the site would involve removal and demolition of above-ground structures; dismantling and removing concrete structures to a depth of 3 feet; removal of underground utilities within 3 feet of final grade; and excavation and removal of contaminated soils, if applicable (see Sections 2.4.6, 2.9.4).

Impacts to vegetation resources would vary, according to the decommissioning strategy and the intended re-use of the site.

Direct Effects

Facilities removal during decommissioning would be expected to take place within the approved project footprint, and would not be expected to remove or degrade vegetation, special-status plants, or state-jurisdictional streambeds beyond the project boundaries, except through the effects of dust or similar direct off-site impacts, as discussed above (direct effects of construction). These impacts can be reduced through implementation of required Mitigation Measures VEG-1 through MM VEG-6, which would apply during decommissioning as they would during construction. In particular, Mitigation Measure VEG-5 (Prepare and Implement a Vegetation Resources Management Plan) requires the project owner to prepare and implement a supplement to the Vegetation Resources Management Plan during decommissioning, to be compatible with the proposed re-use of the site and the other components of the decommissioning plan. If the ultimate re-use of the proposed project site is to return it to natural open space, then the expected recontouring and replanting during decommissioning would have a net benefit to vegetation resources. This potential beneficial impact cannot be evaluated at this time, pending the final re-use decision and the details of the decommissioning plan.

Indirect Effects

The indirect effects of decommissioning to vegetation resources would be similar to the indirect effects described above for project construction. These indirect effects would include the potential for introduction or spread of invasive weeds and effects to downstream hydrology and associated vegetation. These impacts would be minimized by Mitigation Measures VEG-8 (Implement Best Management Practices to Minimize Impacts to Jurisdictional Areas), MM VEG-9 (Prepare and Implement an Integrated Weed Management Plan), and MM VEG-10 (Prepare and Implement a Desert Dry Wash Woodland Monitoring and Reporting Plan).

Mitigation Measures

The following mitigation measures are required to reduce effects related to construction, O&M, and decommissioning of the project.

MM VEG-1 **Assign a Designated Biologist and Biological Monitors.** Prior to ground-disturbing activities, an individual will be designated by the project owner and approved by the BLM, Riverside County, and the Resource Agencies (USFWS and CDFG) as a Designated Biologist (i.e., field contact representative). The project owner will appoint a Designated Biologist throughout the construction, O&M, and post-project decommissioning phases, and any subsequent monitoring/reporting period. For the construction and decommissioning phases of the project, and subsequent monitoring and reporting, the Designated Biologist's qualifications will be as listed below. These requirements may be adjusted over the life of the project depending on specific agency policies and status of special-status species in the vicinity, and the nature of project operational activities by agreement among the BLM, Riverside County, and Resource Agencies. Minimum qualifications shall be as follows:

- Bachelor's degree in biological sciences, zoology, botany, ecology, or a closely related field;

- At least three years of experience in field biology or current certification of a nationally recognized biological society, such as The Ecological Society of America or The Wildlife Society;
- At least one year of direct field experience with biological resources found in or near the project area, including desert tortoise;
- Meet the current USFWS Authorized Biologist qualifications criteria (http://.fws.gov/ventura/species_information/protocols_guidelines/index.html), demonstrate familiarity with protocols and guidelines for the desert tortoise, and be approved by the USFWS (note that biologists who meet earlier USFWS criteria may not meet current criteria due to requirements to assess health and draw blood; biologists must obtain training such as that offered through the Desert Tortoise Conservation Center in Las Vegas); and
- Possess a California Endangered Species Act Memorandum of Understanding pursuant to Section 2081(a) for desert tortoise.

The Designated Biologist duties will vary during the construction, O&M, and decommissioning phases. In general, the duties will include, but will not be limited to those listed below:

- Notify the BLM's Authorized Officer, Riverside County, and the Resource Agencies at least 14 calendar days before initiation of ground-disturbing activities.
- Immediately notify the project owner, BLM's Authorized Officer, Riverside County, and the Resource Agencies (as applicable) in writing of any non-compliance with any of the biological mitigation measures or permit conditions.
- Conduct continuous compliance inspections throughout the initial site preparation activities, including the construction of tortoise-exclusion fencing; pre-construction clearance surveys; and initial clearing, grubbing, and grading. Provide weekly verbal or written updates to BLM, Riverside County, and, for any information pertinent to state or federal permits, to the Resource Agencies.
- After the initial clearance and construction activities are complete, conduct monthly compliance inspections throughout the construction and decommissioning phases of the project, and provide weekly verbal or written updates to BLM, Riverside County, CDFG, and USFWS. The Biological Monitor will conduct inspections daily or weekly as necessary during construction and decommissioning to provide these weekly updates. Prepare and submit monthly compliance reports as required in MM VEG-2, and other reports as required under all applicable mitigation measures. A copy of the monthly compliance reports will also be provided to Joshua Tree National Park (JTNP).
- During the operations phase of the project, conduct quarterly compliance inspections; conduct weed monitoring and control (as required in MM

VEG-9); prepare and submit quarterly compliance reports and other reports as required under all adopted mitigation measures.

- Be available to supervise, conduct, and coordinate mitigation, monitoring, and other biological resources compliance requirements, particularly in areas requiring avoidance or containing sensitive biological resources, such as special-status species or their habitat; and to appoint a Biological Monitor as temporary contact at any time the Designated Biologist will be unavailable.
- Respond directly to inquiries of the BLM, Riverside County, the Resource Agencies, NPS, or any other agencies regarding biological resource issues.
- Train and supervise the Biological Monitors as appropriate, and ensure their familiarity with the Worker Environmental Awareness Program (WEAP) training, mitigation measures, conditions required by biological permits and agreements, and current USFWS guidelines on desert tortoise surveys and handling procedures.
- Maintain the ability to be in regular, direct communication with representatives of the BLM, Riverside County, the Resource Agencies, and JTNP, including notifying these agencies of dead or injured special-status species.

The project owner and Designated Biologist will appoint Biological Monitors as needed for the construction, O&M, and decommissioning phases of the project. During the operations phase, a Biological Monitor may assume most of the on-site duties, so long as a qualified Designated Biologist is available as needed. The Designated Biologist will submit the resume, at least three (3) references, and contact information of each of the proposed Biological Monitors to the BLM's Authorized Officer, Riverside County, and the Resource Agencies. The resume will demonstrate, to the satisfaction of the BLM's Authorized Officer and Riverside County, the appropriate education and experience to accomplish the assigned biological resources tasks. The responsibilities, qualifications, and authority of each Biological Monitor will be the equivalent of the USFWS designated Desert Tortoise Monitor (http://www.fws.gov/ra/pecies_information/rotocols_guidelines/.).

The Designated Biologist and Biological Monitors will conduct clearance surveys and monitoring duties as defined in all adopted mitigation measures. In addition, they will:

- Clearly mark sensitive biological resource areas, as appropriate, during construction, O&M, and decommissioning, and inspect these areas at appropriate intervals for compliance with regulatory terms and conditions.
- Inspect active construction or O&M activity areas where animals may have become trapped prior to construction commencing each day. At the end of each work day, inspect for the installation of structures that prevent entrapment or allow escape during periods of construction inactivity. Periodically inspect areas with high vehicle activity (e.g., parking lots) for animals in harm's way and relocate them if necessary.

- Present WEAP training to all project employees, contractors, and on-site personnel and provide documentation to the BLM, Riverside County, and Resource Agencies (as applicable), as defined in MM VEG-3.

MM VEG-2 Conduct Biological Monitoring and Reporting during Project Construction, Operations, and Decommissioning. The Designated Biologist and Biological Monitors will conduct surveys and monitoring of mobilization activities, construction-related ground disturbance, grading, boring, or trenching during all phases of the project. The Designated Biologist and Biological Monitors will ensure that construction activities are contained within the staked and flagged construction areas at all times. The Designated Biologist or a Biological Monitor will be present during all ground-disturbing activities and, to the extent practicable, will actively or passively (i.e., without handling the animals) relocate wildlife out of harm's way. Relocated animals will be moved to a suitable location on BLM lands outside of the project footprint. This location will be within 500 meters of the animal's original location, if feasible. Desert tortoises will only be handled in accordance with the project Biological Opinion and Incidental Take Permit issued by USFWS and CDFG, respectively. Provisions for handling desert tortoises will be specified in the Desert Tortoise Translocation Plan (see MM WIL-2).

The Designated Biologist will have the authority and responsibility to immediately halt any project activities that are not in compliance with mitigation measures incorporated into the BLM Record of Decision or Riverside County's Conditional Use Permit or any Conditions of Approval, any requirements of the USFWS Biological Opinion, the CDFG 2081 Incidental Take Permit or 2080.1 Consistency Determination, the CDFG 1600 Streambed Alteration Agreement, or any other applicable permit or agreement for the project involving biological resources.

The Designated Biologist and the Biological Monitors will also have the authority to order any reasonable measure to avoid take of a listed species. If required by the Designated Biologist or Biological Monitor(s), the project owner's construction/operation manager will halt any site mobilization, ground disturbance, grading, boring, trenching, or operation activities in areas specified by the Designated Biologist. The Designated Biologist will:

1. Require a halt to any activities in any area if it is determined that the activity, if continued, would cause an unauthorized adverse impact to biological resources;
2. Inform the project owner and the construction/operation manager when activities may resume;
3. Notify the BLM, Riverside County, and Resource Agencies (as applicable) no later than the following morning (or Monday morning in the case of a weekend) of a halt of any activities, and any corrective actions already taken or to be taken as a result of the work stoppage;

4. If the Designated Biologist is unavailable for direct consultation, an appointed Biological Monitor will act on behalf of the Designated Biologist; and
5. Report all special-status species observations to the CNDDB and include copes of these reports in monthly or quarterly monitoring reports, and immediately report any dead or injured listed threatened or endangered species to the Resource Agencies.

Any translocation of desert tortoises will be done in accordance with the project Biological Opinion issued by the USFWS, and any biologists who handle tortoises will be authorized to do so in advance by USFWS.

Throughout the construction and decommissioning phases of the project, the Designated Biologist will submit a monthly compliance report to the project owner, BLM's Authorized Officer, Riverside County, and the Resource Agencies. Copies of the monthly compliance reports will also be provided to the NPS. After construction has been completed, and again when decommissioning is complete, the Designated Biologist will provide the project owner, Bureau of Land Management (BLM), Riverside County, and JTNP with final construction-phase and decommissioning-phase monitoring reports. The Biological Monitor will also provide BLM with brief weekly updates on the status of construction and monitoring efforts throughout the construction and decommissioning phases. During the O&M phase, the reporting schedule will be quarterly rather than monthly. The project owner will be responsible for ensuring that construction monitoring is conducted during all project phases.

MM VEG-3 Prepare and Implement a Worker Environmental Awareness Program (WEAP). This mitigation measure provides further detail and specificity to the WEAP requirements described in AM BIO-4. The project owner will prepare and implement a project-specific WEAP that will be available in English and Spanish. The project owner will secure approval for the WEAP from the BLM and Riverside County in consultation with the USFWS and CDFG. The WEAP will be provided to the JTNP for review and comment. The project owner will be responsible for ensuring that all workers at the site receive this training prior to beginning work on the project and throughout the construction, operations, and decommissioning phases. The WEAP will be administered to all on-site personnel including surveyors, construction engineers, employees, contractors, contractor's employees, supervisors, inspectors, subcontractors, and delivery personnel. The WEAP will be implemented during site pre-construction, construction, operation, and closure/decommissioning. The WEAP will:

1. Be developed by or in consultation with the Designated Biologist and consist of an on-site or training center presentation in which supporting written material and electronic media, including photographs of protected species, is made available to all participants;
2. Provide an explanation of the function of flagging that designates authorized work areas;

3. Discuss general safety protocols such as hazardous substance spill prevention and containment measures and fire prevention and protection measures;
4. Provide a review of mitigation and biological permit requirements;
5. Provide an explanation of the sensitivity of the vegetation and habitat within and adjacent to work areas, and proper identification of these resources;
6. Provide a discussion of the federal and State Endangered Species Acts, Bald and Golden Eagle Protection Act, and the Migratory Bird Treaty Act and the consequences of non-compliance with these acts;
7. Discuss the locations and types of sensitive biological resources on the project site and adjacent areas, and explain the reasons for protecting these resources;
8. Inform participants that no snakes, other reptiles, birds, bats, or any other wildlife will be harmed or harassed;
9. Place special emphasis on species known or likely to occur on the project site and/or gen-tie alignment, including special-status plants, desert tortoise, Mojave fringe-toed lizard, burrowing owl, golden eagle, nesting birds, desert kit fox, Palm Springs round-tailed ground squirrel, American badger, and Nelson's bighorn sheep, including information on physical characteristics, distribution, behavior, ecology, sensitivity to human activities, legal protection, penalties for violations, reporting requirements, and protection measures;
10. Describe the temporary and permanent habitat protection measures to be implemented at the project site;
11. Discuss the importance of avoiding the introduction of invasive weeds onto the project site and surrounding areas, describe the Integrated Weed Management Plan (MM VEG-9) and applicable compliance requirements for workers on the site;
12. Provide contact information for the Designated Biologist and Biological Monitors to handle late comments and questions about the material discussed in the program, as well as notification of any dead or injured wildlife species encountered during project-related activities;
13. Include printed training materials, including photographs and brief descriptions of Emory's crucifixion thorn and other special-status plants that may be encountered, desert tortoises, Mojave fringe-toed lizards, burrowing owls, golden eagles, nesting birds covered under the Migratory Bird Treaty Act, desert kit fox, roosting bats, Palm Springs round-tailed ground squirrels, Nelson's bighorn sheep, and American badger, including behavior, ecology, sensitivity to human activities, legal protection, penalties for violations, reporting requirements, and protection measures;
14. Prominently display posters and descriptions in offices, conference rooms, employee break rooms, and other areas where employees may congregate, of Emory's crucifixion thorn and other special-status plants that may be encountered, desert tortoises, Mojave fringe-toed lizards, burrowing owls, golden eagles, nesting birds, desert kit fox, roosting bats, Palm Springs round-

tailed ground squirrels, Nelson's bighorn sheep, and American badger, including behavior, ecology, sensitivity to human activities, legal protection, penalties for violations, reporting requirements, and protection measures;

15. Direct all WEAP trainees to report all observations of listed species and their sign to the Designated Biologist for inclusion in the monthly compliance report; and
16. Include a training acknowledgment form to be signed by each worker indicating that they received training and will abide by the guidelines.

The specific program can be administered by a competent individual(s) acceptable to the Designated Biologist. The project owner will be responsible for ensuring that each construction worker at the site and gen-tie, throughout the duration of construction and decommissioning activities, receives the above training.

MM VEG-4 **Minimize Construction-Related Impacts.** Final engineering of the project will reduce the extent of the temporary construction work areas to the extent feasible and minimize the impacts to native vegetation and habitat. Prior to the start of construction, work areas (including, but not limited to, staging areas, access roads, and sites for temporary placement of construction materials and spoils) will be delineated with orange construction fencing or staking to clearly identify the limits of work and will be verified by the Designated Biologist or the Biological Monitor (MM VEG-1) prior to ground-disturbing activities. Fencing/staking will remain in place for the duration of construction. Spoils will be stockpiled in disturbed areas lacking native vegetation or where habitat quality is poor. To the extent possible, disturbance of shrubs and surface soils due to stockpiling will be minimized. All disturbances, vehicles, and equipment will be confined to the fenced/flagged areas.

Spoils and topsoil will be stockpiled in areas already disturbed or to be disturbed by construction, so that stockpile sites do not add to total disturbance footprint.

When feasible, construction activities will implement drive and crush rather than grading. Construction equipment would drive over and crush native plants to minimize impacts to the roots of desert shrubs. Drive and crush is expected to reduce the recovery time of desert shrubs within the temporary construction areas.

MM VEG-5 **Prepare and Implement a Vegetation Resources Management Plan.** This mitigation measure provides further detail and specificity to the Pre-construction Surveys for Special-Status Plant Species and Cacti provided in AM BIO-3, and the Vegetation Resources Management Plan described in AM BIO-5. The project owner will contract a qualified botanist to prepare and implement a Vegetation Resources Management Plan, to be reviewed and approved by BLM, Riverside County, and the Resource Agencies. The Resources Management Plan will be provided to the JTNP for review and comment. The Vegetation Resources Management Plan must be approved in writing prior to the initiation of any vegetation-disturbing activities. The Plan's goal will be to prevent further degradation of disturbed sites, but not necessarily to restore pre-disturbance habitat values, due to off-site compensation requirements (MM VEG-6). The

Vegetation Resources Management Plan will detail the methods for revegetation of temporarily impacted sites; salvage of cacti and special-status plants from the project footprint; and long-term management of vegetation within the solar facility during its operations. The Vegetation Resources Management Plan will be supplemented prior to decommissioning to provide a framework for vegetation management and post-decommissioning restoration/reclamation. The Vegetation Resources Management Plan will include the following components:

1. **Reclamation, revegetation, or restoration of temporarily impacted sites.** Temporary project disturbances to soils and vegetation (e.g., staging areas, materials and equipment, lay-down areas, temporary work areas and access routes along the gen-tie line) are analyzed as long-term disturbance, and habitat compensation lands are required to mitigate those long-term impacts (MM VEG-6). In order to avoid further degradation of these sites, the project owner will prepare and implement a plan to revegetate or restore the sites. The objectives will be to prevent or minimize further site degradation; stabilize soils; maximize the likelihood of vegetation recovery over time; and minimize soil erosion, dust generation, and weed invasions. The nature of site reclamation, revegetation, or restoration at each site will differ according to its pre-disturbance condition and the nature of the construction disturbance (e.g., drive and crush, vs. blading).
2. **Implementation**: The Plan will include at minimum: (a) soil preparation measures, including locations of recontouring, decompacting, imprinting, or other treatments; (b) details for topsoil storage, as applicable; (c) plant material collection and acquisition guidelines, including guidelines for salvaging, storing, and handling plants from the project site, as well as obtaining replacement plants from outside the project area; (d) a plan view drawing or schematic depicting the temporary disturbance areas (drawing of "typical" gen-tie structure sites will be appropriate); (e) time of year that the planting or seeding will occur and the methodology of the planting; (f) a description of the irrigation, if used; (g) a statement that the Integrated Weed Management Plan (MM VEG-9) will be implemented, or alternate measures to control invasive weeds undertaken, as appropriate to site conditions; (h) quantitative success criteria; and (i) a detailed monitoring program to measure the success criteria, commensurate with the Plan goals. This Plan will also contain contingency measures for failed revegetation or restoration efforts (efforts not meeting success criteria).
3. **Seed and Nursery Stock.** Only seed or potted nursery stock of locally occurring native species from a local source will be used for revegetation. Seeding and planting will be conducted as described in Chapter 5 of *Rehabilitation of Disturbed Lands in California* (Newton and Claassen 2003). The list of plants observed during botanical surveys of the project area will be used as a guide to site-specific plant selection for revegetation.
4. **Monitoring Requirement and Success Criteria.** The Plan will include objective, quantifiable success criteria, commensurate with the goals of the Plan. Monitoring of the reclamation, revegetation, or restoration sites will

continue annually for 3 years or until the defined success criteria are achieved, whichever is later. The project owner will be responsible for implementing remediation measures as needed. Following remediation work, the site will be subject to the success criteria and monitoring period as required for the initial reclamation, revegetation, or restoration.

5. **Cactus Salvage.** In conformance with BLM policy, the project owner will include salvaged or nursery stock yuccas (all species), and cacti (excluding cholla species, genus *Cylindropuntia*), in revegetation plans and implementation affecting BLM lands. The Plan will include methods to salvage and replant cacti, yucca, or other native species found on the site, prior to disturbance. It will include descriptions of pre-project field surveys to locate and identify specimens suitable for salvage; season for salvaging the plants; methods for salvage, storage, and re-planting them; locations for re-planting; and appropriate monitoring and success criteria for the salvage work.

5. **Operations Phase On-Site Vegetation Management:** The Plan will include methods and scheduling for on-site vegetation management throughout the operations phase, describing mowing or other vegetation treatments to be implemented, disposal of mown material, and incorporating all applicable components of the Integrated Weed Management Plan, including any proposed herbicide usage.

6. **Decommissioning Phase Plan Supplement.** Prior to closing and decommissioning the project, the project owner will contract a qualified botanist to prepare a supplement to the Vegetation Resources Management Plan, to describe all proposed vegetation management activities, and to be consistent with the site's proposed reuse. The supplement will describe any proposed reclamation, revegetation, or restoration of the site, to be consistent with Section 1 of this measure, above, as well as weed management and post-decommissioning monitoring requirements and success criteria.

7. **Reporting.** Within 90 days after completion of each year of project construction, the project owner will provide to the BLM and Riverside County verification of the total vegetation acreage subject to temporary and permanent disturbance and a written report identifying which items of the Vegetation Resources Management Plan have been completed, a summary of all modifications to mitigation measures made during the project's construction and decommissioning phases, and which items are still outstanding. The annual reports will also include a summary of the reclamation, revegetation, or restoration activities for the year, a discussion of whether performance standards for the year were met, any remedial actions conducted and recommendations for remedial action, if warranted, that are planned for the upcoming year.

MM VEG-6 Provide Off-Site Compensation for Impacts to Vegetation and Habitat. This mitigation measure provides further detail and specificity to the habitat compensation requirements described in AM BIO-1. In addition to compensating for impacts to vegetation resources, this measure also compensates for wildlife habitat resources. The Habitat Compensation Plan will compensate for acreages and

habitat types as defined herein. The Plan will be submitted for approval to the BLM, Riverside County, and Resource Agencies prior to the commencement of construction. The Habitat Compensation Plan will be provided to the JTNP for review and comment.

The project owner will acquire and protect, in perpetuity, compensation habitat to mitigate impacts to biological resources as detailed below. The compensation lands will be placed under conservation management to be funded through the terms described herein. The acreages and ratios will be based upon final calculation of impacted acreage for each resource and on ratios set forth in this measure, or in the USFWS Biological Opinion, the CDFG Streambed Alteration Agreement, the CDFG Incidental Take Permit, or the Consistency Determination, whichever presents a higher ratio. Acreages of anticipated compensation requirements as summarized throughout this measure are based on impacts analysis of Alternatives 4 and B (proposed project) in Sections 4.3 and 4.4 and ratios described below. Acreages will be adjusted as appropriate for other alternatives or future modifications during implementation.

Compensation will be provided for impacts to the following resources, at the specified ratios (acres acquired and preserved to acres impacted):

- Blue Palo Verde–Ironwood Woodland (Desert Dry Wash Woodland) (3:1)
- Dune and partially stabilized sandfield habitat (applicable only to Alternative E, all within the Palen-Ford WHMA; 5:1)
- Creosote Bush Scrub (Sonoran Desert Scrub) (1:1)
- State-jurisdictional streambeds (3:1)
- Occupied habitat for special-status plants (1:1; see MM VEG-7)
- Occupied or suitable desert tortoise habitat and habitat linkages (minimum 1:1)
- Occupied and suitable Mojave fringe-toed lizard habitat (only applicable to Alternative E, all within the Palen-Ford WHMA; 5:1)
- Occupied or suitable habitat for breeding or wintering burrowing owls (13 acres for each single burrowing owl or breeding pair if owls occur on compensation lands; 19.5 acres per single burrowing owl or breeding pair if there is no evidence that the compensation lands are currently occupied by burrowing owls). Note that compensation will be required if owls are observed during preconstruction or clearance surveys, or during other incidental observations.
- Golden eagle foraging habitat (1:1)
- Nelson’s bighorn sheep movement habitat (1:1)
- General wildlife movement corridors/habitat linkages (1:1)
- Habitat for other special-status wildlife species and nesting birds (1:1)
- Chuckwalla Desert Wildlife Management Area (DWMA) (5:1)

- Chuckwalla Desert Tortoise Critical Habitat Unit (CHU) (5:1)
- Palen-Ford Wildlife Habitat Management Area (WHMA) (1:1)

Under the proposed project, a total of 1,300 acres would be impacted (1,208 acres at the project site, and 92 acres along gen-tie Alternative B). Based on the proposed project, total habitat compensation lands would be no fewer than 2,083.5 acres, including, at minimum, 1,300 acres of desert tortoise habitat and 928.5 acres of state-jurisdictional streambeds (including at least 693 acres of Blue Palo Verde–Ironwood Woodland, or Desert Dry Wash Woodland). Final compensatory habitat acreages will be based on the final alternative selected and final project design. Table 4.3-3 details the minimum acres of habitat compensation lands for the proposed project, assuming maximum nesting of compensation lands (see discussion of "nesting" in Item 1 below Table 4.3-3). Final compensation requirements will be adjusted to account for any deviations in project disturbance, according to the final alternative selected, final design, and as-built project footprint. If the project shares gen-tie infrastructure with DSSF as proposed under Alternative B, the DHSP project owner will be responsible only for its proportion of compensation acreage to be acquired as mitigation for impacts of the shared facilities (i.e., 50 percent of compensation land requirements for construction-related impacts for shared infrastructure). The total amount of compensation mitigation lands required under this measure may exceed the acreages identified in Table 4.3-3, in order to provide mitigation for all of the resources identified in this measure.

Table 4.3-3. Minimum Total Compensation Acreage for Proposed Project[1]

Resource	Acres of Impact	Compensation Ratio	Compensation Acres
Previously disturbed (no compensation)	2	0	0
All acreage within Chuckwalla DWMA and/or Chuckwalla CHU	35.7	5:1	178.5
Blue Palo Verde–Ironwood Woodland (Desert Dry Wash Woodland), including state-jurisdictional streambeds mapped within woodland habitat (includes acreage within Palen-Ford WHMA; excludes DWMA and CHU)	231	3:1	693
State-jurisdictional streambeds mapped within Creosote Bush Scrub (Sonoran Desert Scrub) habitat (includes acreage within Palen-Ford WHMA; excludes DWMA and CHU)	78.5	3:1	235.5
Creosote Bush Scrub (Sonoran Desert Scrub), excluding state-jurisdictional streambeds mapped within Creosote Bush Scrub habitat (includes acreage within Palen-Ford WHMA; excludes DWMA and CHU)	976.5	1:1	976.5
Minimum Total Habitat Compensation Requirement	1,300		2,083.5

1 - Acreages based on estimates as described in Sections 4.4.7 (Alternative 4) and 4.4.12 (Alternative B).

1. **Nesting Compensation Lands.** Compensation lands for biological resources may be "nested." For example, compensation for impacts to burrowing owls could be entirely or partially fulfilled by the acquisition of Creosote Bush Scrub (Sonoran Desert Scrub) compensation lands, provided those lands also

contain suitable or occupied burrowing owl habitat and the acreage of compensation lands for burrowing owls is met. Thus, compensation for burrowing owls or other resources (desert tortoise, rare plants, golden eagle, etc.) may be fully nested within other compensation requirements.

2. **Compensation Ratios.** Where impacted habitats meet criteria as two (2) or more compensation ratios, the highest ratio will apply. For example, impacts to occupied desert tortoise habitat in Creosote Bush Scrub (Sonoran Desert Scrub) within the Chuckwalla DWMA would require mitigation at a 5:1 ratio.

3. **Compensation Land Selection Criteria.** Criteria for the acquisition, initial protection and habitat improvement, and long-term maintenance and management of compensation lands for impacts to biological resources will include all of the following:

   a. Compensation lands selected for acquisition to meet BLM, USFWS, CDFG, and Riverside County requirements will provide habitat value that is equal to or better than the quality and function of the habitat impacted, to be determined by BLM, CDFG, and USFWS biologist, taking into consideration soils, vegetation, topography, human-related disturbance, wildlife movement opportunity, proximity to other protected lands, management feasibility, and other habitat values;

   b. To the extent that proposed compensation habitat may have been degraded by previous uses or activities, the site quality and nature of degradation must support the expectation that it will regenerate naturally when disturbances are removed;

   c. Be near larger blocks of lands that are either already protected or planned for protection, or which could feasibly be protected long-term by a public resource agency or a non-governmental organization dedicated to habitat preservation;

   d. Not have a history of intensive recreational use or other disturbance that might cause future erosion or other habitat damage, and make habitat recovery and restoration infeasible;

   e. Not be characterized by high densities of invasive species, either on or immediately adjacent to the parcels under consideration, that might jeopardize habitat recovery and restoration;

   f. Not contain hazardous wastes that cannot be removed to the extent that the site could not provide suitable habitat;

   g. Must provide wildlife movement value equal to that on the project site, to be determined by BLM, CDFG, and USFWS, based on topography, presence and nature of movement barriers or crossing points, location in relationship to other habitat areas, management feasibility, and other habitat values; and

h. Have water and mineral rights included as part of the acquisition, unless the BLM and Riverside County, in consultation with CDFG and USFWS, agree in writing to the acceptability of land without these rights.

i. Additional selection criteria for desert tortoise compensation lands:

   i. Compensation lands for impacts to desert tortoise will be within the Colorado Desert Tortoise Recovery Unit;

   ii. Will be contiguous and biologically connected to lands currently occupied by desert tortoise, ideally with populations that are stable, recovering, or likely to recover (for lands proposed as desert tortoise habitat compensation; and

   iii. Will contribute to wildlife movement and desert tortoise population connectivity value at least equal to that on the project site, by contributing to linkages between desert tortoise designated critical habitat, known populations of desert tortoise, and other lands allocated for conservation. The primary focus area for acquiring parcels to maintain/ improve connectivity will be along the I-10 corridor between Desert Center and Cactus City with a priority on parcels that connect conserved lands on either side of the I-10 through large culverts or bridges; the habitat compensation ratio for mitigation lands along the I-10 corridor will be 1:1 for each acre of total long-term and permanent disturbance. If acquisition of sufficient acreage within the I-10 corridor is not feasible, then the project owner will coordinate with Resource Agencies to identify other suitable lands to compensate for the project's impacts to desert tortoise habitat connectivity.

j. Additional selection criteria for special-status plant compensation lands. The compensation lands selected for acquisition for impacts to special-status plants will include at least one of the following categories:

   i. <u>Occupied Habitat, No Habitat Threats</u>. The compensation lands selected for acquisition will be occupied by the target plant population and will be characterized by site integrity and habitat quality that are required to support the target species, and will be of equal or better habitat quality than that of the affected occurrence. The occurrence of the target special-status plant on the proposed acquisition lands should be viable, stable or increasing (in size and reproduction).

   ii. <u>Unoccupied but Adjacent</u>. The project owner may also acquire habitat for which occupancy by the target species has not been documented, if the proposed acquisition lands are adjacent to occupied habitat. The project owner will provide evidence that acquisition of such unoccupied lands would improve the defensibility and long-term sustainability of the occupied habitat by providing a protective buffer around the occurrence and by enhancing connectivity with undisturbed habitat.

k. If all or any portion of the acquired compensation lands meets the habitat occupancy or suitability requirement for more than one of the resources listed above, that portion of those compensation lands may also be used to fulfill that portion of the obligation to acquire compensation lands to mitigate impacts to those resources.

4. **Review and Approval of Compensation Lands Prior to Acquisition.** The project owner will submit a formal acquisition proposal to the BLM, USFWS, CDFG, and Riverside County describing the parcel(s) intended for purchase. This acquisition proposal will discuss the suitability of the proposed parcel(s) as compensation lands in relation to the selection criteria listed above, and must be approved by the BLM, CDFG, USFWS, and Riverside County in. The project owner will submit the formal acquisition proposal to the JTNP for review and comment.

5. **Management Plan.** The project owner or approved third party will prepare a management plan for the compensation lands in consultation with the entity that will be managing the lands. The goal of the management plan will be to support and enhance the long-term viability of the biological resources. The Management Plan will be submitted for review and approval to the BLM, CDFG, USFWS, and Riverside County, in consultation with the JTNP. A copy of the final Management Plan will be provided to the JTNP.

6. **Compensation Lands Acquisition Requirements.** The project owner will comply with the following requirements relating to acquisition of the compensation lands after the BLM, USFWS, CDFG, and Riverside County have approved the proposed compensation lands:

   a. **Preliminary Report.** The project owner, or an approved third party, will provide a recent preliminary title report, initial hazardous materials survey report, biological analysis, and other necessary or requested documents for the proposed compensation land to the BLM, USFWS, CDFG, and Riverside County. All documents conveying or conserving compensation lands and all conditions of title are subject to review and approval by the BLM and Riverside County. For conveyances to the State, approval may also be required from the California Department of General Services, the Fish and Game Commission, and the Wildlife Conservation Board.

   b. **Title/Conveyance.** The project owner will acquire and transfer fee title to the compensation lands, a conservation easement over the lands, or both fee title and conservation easement, as required by the BLM, USFWS, CDFG, and Riverside County. Any transfer of a conservation easement or fee title must be to CDFG, to a non-profit organization qualified to hold title to and manage compensation lands (pursuant to California Government Code section 65965), or to BLM or other public agency approved by the BLM and Riverside County. If an approved non-profit organization holds fee title to the compensation lands, a conservation easement will be recorded in favor of CDFG or another entity approved by the BLM and Riverside County. If an entity other than CDFG holds a conservation

easement over the compensation lands, the BLM and Riverside County may require that CDFG or another entity approved by the BLM, USFWS, and Riverside County, in consultation with CDFG, be named a third party beneficiary of the conservation easement. The project owner will obtain approval of the BLM, USFWS, CDFG, and Riverside County of the terms of any transfer of fee title or conservation easement to the compensation lands.

c. **Initial Protection and Habitat Improvement.** The project owner will fund activities that the BLM and Riverside County require for the initial protection and habitat improvement of the compensation lands. These activities will vary depending on the condition and location of the land acquired, but may include trash removal, construction and repair of fences, invasive plant removal, and similar measures to protect habitat and improve habitat quality on the compensation lands. The costs of these activities are estimated to be $330 per acre of compensation land, but actual costs will vary depending on the measures that are required for the compensation lands. A non-profit organization, CDFG or another public agency may hold and expend the habitat improvement funds if it is qualified to manage the compensation lands (pursuant to California Government Code section 65965), if it meets the approval of the BLM and Riverside County in consultation with USFWS and CDFG, and if it is authorized to participate in implementing the required activities on the compensation lands. If CDFG takes fee title to the compensation lands, the habitat improvement fund must be paid to CDFG or its designee.

d. **Property Analysis Record.** Upon identification of the compensation lands, the project owner will conduct a Property Analysis Record (PAR; Center for Natural Lands Management 2012) or PAR-like analysis to establish the appropriate amount of the long-term maintenance and management fund to pay the in-perpetuity management of the compensation lands. The PAR or PAR-like analysis must be approved by the BLM, Riverside County, USFWS, and CDFG before it can be used to establish funding levels or management activities for the compensation lands.

e. **Long-term Maintenance and Management Funding.** The project owner will provide money to establish an account with non-wasting capital that will be used to fund the long-term maintenance and management of the compensation lands. The amount of money to be paid will be determined through an approved PAR or PAR-like analysis conducted for the compensation lands. Until an approved PAR or PAR-like analysis is conducted for the compensation lands, the amount of required funding is initially estimated to be $1,450 for every acre of compensation lands. If compensation lands will not be identified and a PAR or PAR-like analysis completed within the time period specified for this payment, the project owner will either: (i) provide initial payment equal to the amount of $1,450 multiplied by the number of acres the project owner proposes to acquire for compensatory mitigation; or (ii) provide security to the BLM

and Riverside County under subsection (g), "Mitigation Security," below, in an amount equal to $1,450 multiplied by the number of acres the project owner proposes to acquire for compensatory mitigation. The amount of the required initial payment or security for this item will be adjusted for any change in the project Disturbance Area. If an initial payment is made based on the estimated per-acre costs, the project owner will deposit additional money as may be needed to provide the full amount of long-term maintenance and management funding indicated by a PAR or PAR-like analysis, once the analysis is completed and approved. If the approved analysis indicates less than $1,450 per acquired acre will be required for long-term maintenance and management, the excess paid will be returned to the project owner. The project owner must obtain the BLM and Riverside County's approval of the entity that will receive and hold the long-term maintenance and management fund for the compensation lands. The BLM and Riverside County will consult with USFWS and CDFG before deciding whether to approve an entity to hold the project's long-term maintenance and management funds.

The project owner will ensure that an agreement is in place with the long-term maintenance and management fund holder/manager to ensure the following requirements are met:

i. **Interest.** Interest generated from the initial capital long-term maintenance and management fund will be available for reinvestment into the principal and for the long-term operation, management, and protection of the approved compensation lands, including reasonable administrative overhead, biological monitoring, improvements to carrying capacity, law enforcement measures, and any other action that is approved by the BLM and Riverside County and is designed to protect or improve the habitat values of the compensation lands.

ii. **Withdrawal of Principal.** The long-term maintenance and management fund principal will not be drawn upon unless such withdrawal is deemed necessary by the BLM, USFWS, CDFG, and Riverside County or by the approved third-party long-term maintenance and management fund manager, to ensure the continued viability of the species on the compensation lands.

iii. **Pooling Long-Term Maintenance and Management Funds.** An entity approved to hold long-term maintenance and management funds for the project may pool those funds with similar non-wasting funds that it holds from other projects for long-term maintenance and management of compensation lands. However, for reporting purposes, the long-term maintenance and management funds for this project must be tracked and reported individually to the BLM, USFWS, CDFG, and Riverside County.

f. **Other Expenses.** In addition to the costs listed above, the project owner will be responsible for all other costs related to acquisition of compensa-

tion lands and conservation easements, including but not limited to the title and document review costs incurred from other state agency reviews, overhead related to providing compensation lands to CDFG or an approved third party, escrow fees or costs, environmental contaminants clearance, and other site cleanup measures.

g. **Mitigation Security.** No fewer than 30 days prior to ground disturbance, the project owner will provide financial assurances to the BLM and Riverside County to guarantee that an adequate level of funding is available to implement any of the mitigation measures required by this condition that are not completed prior to the start of ground-disturbing project activities. Financial assurances will be provided to the BLM, USFWS, CDFG, and Riverside County in the form of an irrevocable letter of credit, a pledged savings account or another form of security ("Security") approved by the BLM, USFWS, CDFG, and Riverside County. The actual costs to comply with this condition will vary depending on the actual costs of acquiring compensation habitat, the costs of initially improving the habitat, and the actual costs of long-term management as determined by a PAR report. Prior to submitting the Security to the BLM, USFWS, CDFG, and Riverside County, the project owner will obtain the BLM, USFWS, CDFG, and Riverside County's approval of the form of the Security. The BLM, USFWS, CDFG, and Riverside County may draw on the Security if the BLM, USFWS, CDFG, and Riverside County determine the project owner has failed to comply with the requirements specified in this condition. The BLM, USFWS, CDFG, and Riverside County may use money from the Security solely for implementation of the requirements of this condition. The BLM, USFWS, CDFG, and Riverside County's use of the Security to implement measures in this condition may not fully satisfy the project owner's obligations under this condition, and the project owner remains responsible for satisfying the obligations under this condition if the Security is insufficient. The unused Security will be returned to the project owner in whole or in part upon successful completion of the associated requirements in this condition.

Security for the requirements of this condition will be calculated as shown in Table 4.3-4. However, regardless of the amount of the security or actual cost of implementation, the project owner will be responsible for implementing all aspects of this condition, including acquisition and protection of additional habitat acreage if necessary to compensate for all impacts listed in this mitigation measure.

Table 4.3-4. Biological Resource Compensation/Mitigation Cost Estimate[1] and Table of Estimated Costs[2]

Task	Cost
1. Land Acquisition	$1,000 per acre[3]
2. Level 1 Environmental Site Assessment (estimated 160-acre average parcel size)	$3,000 per parcel[4]

Table 4.3-4. Biological Resource Compensation/Mitigation Cost Estimate[1] and Table of Estimated Costs[2]

Task		Cost
3.	Appraisal	$5,000 per parcel
4.	Initial site work – clean-up, enhancement, restoration	$330 per acre[5]
5.	Closing and Escrow Costs – 1 transaction includes landowner to third party and third party to agency	$5,000 per parcel
6.	Biological survey for determining mitigation value of land (habitat based with species specific augmentation)	$5,000 per parcel
7.	Third party administrative costs – includes staff time to work with agencies and landowners; develop management plan; oversee land transaction; organizational reporting and due diligence; review of acquisition documents; assembling acres to acquire; etc.	10% of land acquisition cost (#1)
8.	Agency costs to review and determine accepting land donation – includes 2 physical inspections; review and approval of the Level 1 ESA assessment; review of all title documents; drafting deed and deed restrictions; issue escrow instructions; mapping the parcels.	15% of land acquisition cost (#1) × 1.17 (17% of the 15% for overhead)
	Subtotal - Acquisition & Initial Site Work	$ $3,430,379.25
9.	Long-term Management and Maintenance (LTMM) Fund – includes land management; enforcement and defense of easement or title [short- and long-term]; monitoring; etc.	$1,450 per acre[6]
	Total (if compensation not implemented through NFWF account)	$ $6,243,104.25
	NFWF Fees	
10.	Establish the project specific account	$12,000
11.	NFWF management fee for acquisition & initial site work	3% of SUBTOTAL
12.	NFWF Management fee for LTMM Fund	1% of LTMM Fund
	Total for deposit in REAT-NFWF Project-Specific Account	$ $6,386,142.88

1 - All costs are best estimates as of fall 2011. Actual costs will be determined at the time of the transactions and may change the funding needed to implement the required mitigation obligation. Note: regardless of the estimates, the developer is responsible for providing adequate funding to implement the required mitigation.
2 - Companion table to the excel spreadsheet with formulas.
3 - Generalized estimate taking into consideration a likely jump in land costs due to demand, and an 18- to 24-month window to acquire the land after agency decisions are made. If the agencies, developer, or third party has better, credible information on land costs in the specific area where project-specific mitigation lands are likely to be purchased, that data overrides this general estimate. Note: regardless of the estimates, the developer is responsible for providing adequate funding to implement the required mitigation.
4 - For the purposes of determining costs, a parcel is 160 acres.
5 - Based on information from CDFG.
6 - Estimate for purposes of calculating general costs. The actual long term management and maintenance costs will be determined using a Property Assessment Report (PAR) tailored to the specific acquisition.

h. The project owner may elect to comply with the requirements in this condition for acquisition of compensation lands, initial protection and habitat improvement on the compensation lands, or long-term maintenance and management of the compensation lands, or any combination of these three requirements, by providing funds to implement those measures into the Renewable Energy Action Team (REAT) Account established with the National Fish and Wildlife Foundation (NFWF). To use this option, the project owner must make an initial deposit to the REAT Account in an amount equal to the estimated costs (as set forth in the Security section of this condition) of implementing the requirement and additional fees,

management funds, and other costs associated with the NFWF account. If the actual cost of the acquisition, initial protection and habitat improvements, or long-term funding is more than the estimated amount initially paid by the project owner, the project owner will make an additional deposit into the REAT Account sufficient to cover the actual acquisition costs, the actual costs of initial protection and habitat improvement on the compensation lands, and the long-term funding requirements as established in an approved PAR or PAR-like analysis. If those actual costs or PAR projections are less than the amount initially transferred by the Applicant, the remaining balance will be returned to the project owner.

i. The responsibility for acquisition of compensation lands may be delegated to a third party other than NFWF, such as a non-governmental organization supportive of desert habitat conservation, by written agreement of the BLM, USFWS, CDFG, and Riverside County. Such delegation will be subject to approval by the BLM and Riverside County, in consultation with CDFG and USFWS, prior to land acquisition, enhancement or management activities. Agreements to delegate land acquisition to an approved third party, or to manage compensation lands, will be executed and implemented within 18 months of the BLM and Riverside County's certification of the project.

j. The project owner may choose to compensate and mitigate for impacts to state-listed endangered species pursuant to §2081 of the California Endangered Species Act using one or both of the "in-lieu fee" or "advance mitigation" mechanisms set forth in AB 13. Compensation lands acquired through AB 13 may in whole or in part satisfy the compensation habitat requirements set forth in this mitigation measure, only to the extent that they do in fact provide habitat values and mitigation for significant impacts to the species and biological resources identified above, and are consistent with the selection criteria described above.

MM VEG-7 **Mitigate Direct Impacts to Special-Status Plants.** This mitigation measure provides further detail and specificity to the Pre-construction Surveys for Special-Status Plant Species and Cacti provided in AM BIO-3. The project owner will mitigate impacts to Emory's crucifixion thorn (CRPR 2) on the solar generator site and direct impacts to any other CRPR 1 or 2 ranked plants that may be impacted by gen-tie line construction, including impacts to Harwood's woollystar (CRPR 1) on gen-tie Alternative E, through one or a combination of the following strategies.

1. **Avoidance.** Project design will avoid at minimum 75 percent of the Emory's crucifixion thorn, Harwood's woollystar, and other CRPR 1 or 2 ranked plants occurrences within the project boundaries or other work areas, including the gen-tie line, and will provide a minimum 100-foot buffer area surrounding each avoided occurrence, where no project activities will take place.

2. **Off-site compensation.** The project owner will provide compensation lands consisting of occupied Emory's crucifixion thorn, Harwood's woollystar or

other CRPR 1 or 2 ranked plants, habitat at a 1:1 ratio for any occupied habitat affected by the project, according to the terms described in MM VEG-6. Occupied habitat will be calculate on the project site and on the compensation lands as including each special status plant occurrence and a surrounding 100-foot buffer area. Off-site compensation will be incorporated into the project's Habitat Compensation Plan, for review and approval by the BLM, Riverside County, and the Resource Agencies.

3. **Salvage.** It is not known whether salvage is a feasible mitigation strategy for Emory's crucifixion thorn or most other special-status plants. For Emory's crucifixion thorn, the project owner will consult with Rancho Santa Ana Botanic Garden (RSABG) regarding the success of salvage efforts for this species at the Desert Sunlight Solar Farm Project site. If the strategy has been shown to be feasible, then the project owner will prepare and implement an Emory's Crucifixion Thorn Salvage and Relocation Plan, to be reviewed and approved by the BLM, Riverside County EPD, and the Resource Agencies, prior to disturbance of any occupied Emory's crucifixion thorn habitat. Emory's crucifixion thorn on private lands may also be subject to the provisions of the California Desert Native Plants Act. The project owner will contract with RSABG or another entity with comparable experience and qualifications, to salvage at minimum 75 percent of Emory's crucifixion thorn individuals from the proposed project site and transfer them to a suitable off-site location approved by BLM. If special-status plants are salvaged from non-BLM land, then all salvage planning and activities will be subject to review and approval by Riverside County EPD. For other special-status plants (i.e., on gen-tie Alternative E, if they occur), the project owner will consult with the BLM botanist and/or Riverside County (as applicable), along with RSABG or another qualified entity, to develop an appropriate experimental salvage and relocation strategy, based on the life history of the species affected. The Plan will include at minimum: (a) collection/salvage measures for plants or seed banks, to retain intact soil conditions and maximize success likelihood; (b) details regarding storage of plants or seed banks; (c) location of the proposed recipient site, and detailed site preparation and plant introduction techniques details for top soil storage, as applicable; (d); time of year that the salvage and replanting or seeding will occur and the methodology of the replanting; (e) a description of the irrigation, if used; (f) success criteria; and (g) a detailed monitoring program, commensurate with the Plan's goals.

4. **Horticultural propagation and off-site introduction.** If salvage and relocation is not believed to be feasible for Emory's crucifixion thorn or other special-status plants, then the project owner will consult with RSABG or another qualified entity, to develop an appropriate experimental propagation and relocation strategy, based on the life history of the species affected. The Plan will include at minimum: (a) collection/salvage measures for plant materials or seed banks, to retain intact soil conditions and maximize success likelihood; (b) details regarding storage of plant, plant materials, or seed banks; (c) location of the proposed propagation facility, and proposed methods; (d);

time of year that the salvage and other practices will occur; (e) success criteria; and (f) a detailed monitoring program, commensurate with the Plan's goals.

MM VEG-8 Implement Best Management Practices to Minimize Impacts to Jurisdictional Areas. The project owner will implement all mitigation measures and conditions contained within the Streambed Alteration Agreement obtained from the California Department of Fish and Game for impacts to jurisdictional areas, as well as any requirements of the Regional Water Quality Control Board or the U.S. Army Corps of Engineers, upon determination of jurisdiction and permit issuance by all three agencies (see MM WAT-1). In addition, the following Best Management Practices will be implemented during all construction activity in or near ephemeral drainages:

1. Vehicles and equipment will not operate in ponded or flowing water except as described in the Streambed Alteration Agreement.
2. The project Proponent will minimize road building, construction activities, and vegetation clearing within ephemeral drainages to the extent feasible.
3. The project Proponent shall prevent water containing mud, silt, or other pollutants from grading or other activities to enter ephemeral drainages or be placed in locations that may be subjected to high storm flows.
4. Spoil sites will not be located within 30 feet from the boundaries of drainages or in locations that may be subjected to high storm flows, where spoils might be washed back into drainages.
5. Raw cement/concrete or washings thereof, asphalt, paint or other coating material, oil or other petroleum products, or any other substances that could be hazardous to vegetation or wildlife resources, resulting from project-related activities, will not contaminate the soil and/or entering ephemeral drainages. The project owner shall ensure that safety precautions specified by this measure, as well as all other safety requirements of other measures and permit conditions are followed during all phases of the project.
6. When operations are completed, any excess materials or debris will be removed from the work area. No rubbish will be deposited within 150 feet of the high water mark of any drainage during construction, operation, and decommissioning the project.
7. No equipment maintenance will occur within 150 feet of any category 3, 4, or 5 streambed or any streambed greater than 10 feet wide and no petroleum products or other pollutants from the equipment will be allowed to enter these areas or enter any off-site state-jurisdictional waters under any flow.
8. With the exception of the drainage control system installed for the project, the installation of bridges, culverts, or other structures will be such that water flow (velocity and low flow channel width) is not impaired. Bottoms of temporary culverts will be placed at or below stream channel grade.

9. No broken concrete, debris, soil, silt, sand, bark, slash, sawdust, rubbish, or other organic or earthen material from any construction or associated activity of whatever nature will be allowed to enter into, or placed where it may be washed by rainfall or runoff into, off-site state-jurisdictional waters.
10. Stationary equipment such as motors, pumps, generators, and welders, located within or adjacent to a drainage, will be positioned over drip pans. Stationary heavy equipment will have suitable containment to handle a catastrophic spill/leak. Clean up equipment such as brooms, absorbent pads, and skimmers will be on site prior to the start of construction.
11. The cleanup of all spills will begin immediately. The BLM, the State of California Department of Toxic Substances Control, and Riverside County will be notified immediately by the project owner of any spills and will be consulted regarding clean-up procedures.
12. Non-Native Vegetation Removal. The project owner will remove any non-native vegetation (consistent with the Integrated Weed Management Plan, MM VEG-9) from any drainage on the project site that requires the placement of a bridge, culvert, or other structure. Removal will be done at least twice annually (spring/summer) throughout the life of the project.

MM VEG-9 **Prepare and Implement an Integrated Weed Management Plan.** This mitigation measure provides further detail and specificity to the Integrated Weed Management Plan described in AM BIO-2. The project owner will contract a qualified biologist to prepare and implement a Weed Management Plan that meets the approval of the BLM and Riverside County EPD, in consultation with the JTNP, CDFG, and USFWS. The Weed Management Plan will be approved prior to initial ground disturbance. At minimum, the Weed Management Plan will include the following:

1. An assessment of nonnative and invasive weeds occurring onsite prior to construction activities;
2. An assessment of nonnative and invasive weeds that could be introduced into the project area;
3. A description of methods to be used to survey for the presence of introduced weeds during construction and operation;
4. Monitoring and weed control methods to be employed during operation, consistent with BLM's Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States (BLM 2007) and the National Invasive Species Management Plan (NISC 2008);
5. Specific and detailed guidelines for herbicide use to prevent overspray onto surrounding areas where it would adversely affect wildlife or native plants; and
6. Reporting requirements.

The final plan will only include weed control measures with a demonstrated record of success for target weeds, based on the best available information from sources

such as: The Nature Conservancy's The Global Invasive Species Team, Cooperative Extension, California Invasive Plant Council: http://www.cal-ipc.org/_/index.php, and the California Department of Food & Agriculture Encyclopedia: http://www.cdfa.ca.gov/phpps/ipc/_hp. The methods will meet the following criteria:

1. **Manual.** Well-timed removal of plants or seed heads with hand tools; seed heads and plants must be disposed of in accordance with guidelines from the Riverside County Agricultural Commissioner.
2. **Chemical.** Herbicides known to have residual toxicity, such as pre-emergents and pelts, will not be used in natural areas or within channels (engineered or not) where they could run off into downstream areas. Only the following application methods may be used: wick (wiping onto leaves); inner bark injection; cut stump; frill or hack & squirt (into cuts in the trunk); basal bark girdling; foliar spot spraying with backpack sprayers or pump sprayers at low pressure or with a shield attachment to control drift, and only on windless days, or with a squeeze bottle for small infestations

In addition to describing weed eradication and control methods, and a reporting plan for weed management during and after construction, the final Weed Management Plan will include at minimum the following Best Management Practices to prevent the spread and propagation of weeds:

a. Limit the extent of any vegetation and/or ground disturbance to the absolute minimum needed, and limit ingress and egress to defined routes.

b. Install and maintain vehicle wash and inspection stations and closely monitor the types of materials brought onto the site.

c. Reestablish soil stability and vegetation on temporarily disturbed sites (measures and performance standards to be consistent with the Vegetation Resources Management Plan, described in MM VEG-5).

d. Monitoring and timely implementation of control measures to ensure early detection and eradication for weed invasions. Weed infestations must be controlled or eradicated as soon as possible upon discovery, and before they go to seed, to prevent further expansion.

e. Use only certified weed-free straw or hay bales used for sediment barrier installations, and certified weed-free seed.

f. Reclamation, revegetation, or restoration will occur on all temporarily disturbed areas, including, but not limited to, temporary access roads, construction work temporary lay-down areas, and staging areas (consistent with MM VEG-5).

g. Control weeds in areas where dust control, irrigation, and solar panel washing take place.

h. Prohibit on-site storage or disposal of mulch or green waste from weed material to prevent inadvertent introduction and spread of invasive plants beyond the immediate vicinity of the project area and possibly into rare plant popula-

tions off-site. Mulch or green waste will be removed from the site in a covered vehicle to prevent seed dispersal, and transported to a licensed landfill or composting facility.

i. Indicate where herbicides may be used, which herbicides, and specify techniques to be used to avoid chemical drift or residual toxicity to special-status plants, consistent with consistent with BLM's Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States (BLM 2007) and guidelines provided by the Nature Conservancy's The Global Invasive Species Team: http://www.invasive.org/gist/products.html.

j. Avoid herbicide use or other control methods in or around any environmentally sensitive areas identified within or adjacent to the project site.

Nonnative and invasive weed infestations will be flagged by the Designated Biologist or Biological Monitor and controlled, using either mechanical (hand pulling, mowing) or chemical methods as approved by the BLM and, as appropriate, Riverside County. Only state and BLM-approved herbicides will be used, and all herbicide applicators will possess a qualified herbicide applicator license from the state. All herbicide applications will follow U.S. Environmental Protection Agency label instructions and be performed in accordance with federal, state, and local laws and regulations.

From the time construction begins and throughout the life of the project, surveying for new invasive weed populations and the monitoring of identified and treated populations will be required within the project area. Surveying and monitoring for weed infestations will occur at least two times per year (timed to occur early and late in the growing season). Treatment of all identified weed populations will occur at a minimum of once annually. When no new seedlings or resprouts are observed at treated sites for three consecutive, normal rainfall years, the weed population can be considered eradicated and weed control efforts may cease for that impact site.

MM VEG-10 Prepare and Implement a Desert Dry Wash Woodland Monitoring and Reporting Plan. The project owner will contract a qualified biologist to prepare and submit a Desert Dry Wash Woodland Monitoring and Reporting Plan to BLM, Riverside County, and the Resource Agencies for review and approval and to the JTNP for review and comment prior to commencing project-related pumping activities. Upon approval, the project owner will finalize and implement the Plan. The Desert Dry Wash Woodland Monitoring and Reporting Plan will outline the following information and actions:

1. Prior to project operations, the baseline health and vigor of groundwater-dependent plant species (principally desert ironwood and blue palo verde but also other species such as smoke tree and crucifixion thorn would be included) will be recorded within four zones: immediately off-site at the project boundary, and at ¼-mile, ½-mile and 1-mile distances from proposed project groundwater supply well locations. At least one "control" site, at least 2 miles from the project site, will also be sampled. The number of individuals for

each of the target species to be sampled at each site will be large enough to provide valid comparison of data among sites.

2. A qualified botanist or plant physiologist will develop or adapt a sampling protocol to be carried out in desert dry wash woodland at each sampling zone (above) and the control site to monitor stress and mortality of target plants once operations begin. The protocol will include a measure of pre-dawn water potential or other appropriate indictor or water stress, as measured by standard plant physiology techniques.
3. The Desert Dry Wash Woodland Monitoring and Reporting Plan will identify what constitutes a significant difference in plant stress or mortality under this mitigation measure. If a significant difference in plant stress or mortality is shown at one or more sample locations in comparison to the control site, the project owner will coordinate with BLM, Riverside County, and CDFG to interpret the results. The sample site and control site data will be evaluated in terms of the project's groundwater usage, climate factors, and groundwater monitoring data collected under MM WAT-3. If plant stress or mortality is determined to be related to project activities, then the project owner will either refrain from pumping, reduce groundwater pumping to allow for recovery of the groundwater table, or provide additional habitat compensation as described below.

Monthly Desert Dry Wash Woodland Monitoring summary memos will be submitted to BLM, CDFG, and Riverside County during the construction period of the project. In addition, annual Desert Dry Wash Woodland Monitoring reports will be submitted for at least the first 3 years following completion of construction of the project or until the defined success criteria are achieved, whichever is later. The summary memos will contain the monitoring data required as part of the monitoring program requirements under MM WAT-3. In addition, each Desert Dry Wash Woodland Monitoring Report will provide maps and text discussion of each study site, changes in plant health and vigor, changes in groundwater levels in the production wells, and the year's monitoring data.

If results of the groundwater monitoring program under MM WAT-3 indicate that the project pumping has resulted in water level decline of 1 foot or more below the baseline trend, and vegetation monitoring for plant stress, mortality, and water potential have documented one or more of the sampling sites for the two groundwater-dependent plant species as reaching the threshold (above), the project owner will reduce groundwater pumping until water levels stabilize or recover, provide for temporary supplemental watering, or compensate for additional impacts to desert dry wash woodland (Blue Palo Verde–Ironwood Woodland) at the ratio of 3:1, consistent with MM VEG-6. Estimated acreage of additional dry wash woodland impacts will be submitted to BLM, Riverside County, and the Resource Agencies for approval. Upon approval, the project owner will initiate compensation according to the requirements and conditions for habitat compensation as described in MM VEG-6.

At the conclusion of the three-year monitoring period or until the defined success criteria are achieved, whichever is later, for Desert Dry Wash Woodland following completion of project construction, the project owner, Riverside County, and BLM will jointly evaluate the effectiveness of the Desert Dry Wash Woodland Monitoring and Reporting Plan and determine if monitoring frequencies or procedures should be revised, extended to the operation and decommissioning periods, or eliminated. Should additional data be forthcoming to demonstrate that this potential impact is not verifiable or attributable to this specific project or found inconsistent with state or federal statute, it may be modified or eliminated.

Residual Impacts and Unavoidable Adverse Effects

Some of the mitigation measures described above would mitigate adverse impacts to vegetation resources by preventing the impacts from occurring. For example, MM VEG-9 (Prepare and Implement an Integrated Weed Management Plan) would prevent the introduction and spread of invasive weeds. Other mitigation measures would minimize adverse impacts on the project site and prevent them in adjacent off-site habitats, such as MM VEG-8 (Implement Best Management Practices to Minimize Impacts to Jurisdictional Areas) and MM VEG-6 (Provide Off-Site Compensation for Impacts to Vegetation and Habitat) requires acquisition and management of off-site vegetation and habitat in perpetuity to offset the permanent loss of vegetation and habitat on the project site. This measure, while compensating for impacts to vegetation resources, would not prevent those impacts from occurring. Even with off-site compensation at recommended ratios, there would be a net loss of the native vegetation and related resources (including habitat and streambed values) of 1,208 acres.

With the implementation of Mitigation Measures VEG-1 through MM VEG-10, residual adverse impacts (i.e., impacts remaining after application of mitigation) to vegetation resources would be (1) the net loss of vegetation and habitat on the project site; (2) the direct effects of dust, and other disturbances to adjacent off-site habitat during construction, operation, and decommissioning of the facility; (3) the net loss of special-status plant occurrences on the project site; and (4) the net loss of state-jurisdictional streambeds and associated habitat on the site and, potentially, off-site, if groundwater pumping causes off-site impacts. These impacts are described above, under direct impacts of project construction.

4.3.8 Alternative 5 – Solar Project Excluding WHMA

Alternative 5 would have the same project boundaries as Alternative 4, except that it would exclude the portion of the site which is within the Palen-Ford Wildlife Habitat Management Area (WHMA), as shown on Figure 2-9, Alternative 5: Solar Project Excluding WHMA, in Appendix A. Alternative 5 would encompass 1,161 acres. It would not incorporate any substantial changes to construction, operations, maintenance, or decommissioning from those described for Alternative 4.

Construction

Direct Effects

Direct effects to vegetation resources during construction of Alternative 5 would be as described in Section 4.3.7 for the direct construction effects of Alternative 4, except that the acreage of impacts would be reduced by 47 acres, from 1,208 to 1,161 (see Table 4.3-1). Impacts to state-jurisdictional streambeds would be reduced from 113 acres to 110 acres under Alternative 5. Total impacts to state jurisdictional areas would be reduced from 258.5 to 254.4 acres.

Indirect Effects

Indirect effects to vegetation resources during construction of Alternative 5 would be as described in Section 4.3.7 for the indirect construction effects of Alternative 4.

Operation and Maintenance

Direct Effects

Direct effects to vegetation resources during O&M of Alternative 5 would be as described in Section 4.3.7 for the direct O&M effects of Alternative 4.

Indirect Effects

Indirect effects to vegetation resources during O&M of Alternative 5 would be as described in Section 4.3.7 for the indirect O&M effects of Alternative 4.

Decommissioning

Direct Effects

Direct effects to vegetation resources during decommissioning of Alternative 5 would be as described in Section 4.3.7 for the direct decommissioning effects of Alternative 4.

Indirect Effects

Indirect effects to vegetation resources during decommissioning of Alternative 5 would be as described in Section 4.3.7 for the indirect decommissioning effects of Alternative 4.

Mitigation Measures

Required mitigation measures to reduce or minimize impacts of Alternative 5 to vegetation resources are the same as those required in Section 4.3.7 for Alternative 4. The total compensation requirement under Mitigation Measure VEG-6 would be reduced due to the reduced acreage of project disturbance.

Residual Impacts and Unavoidable Adverse Effects

Residual effects of Alternative 5 to vegetation resources would be as described in Section 4.3.7 for the residual effects of Alternative 4, except that the acreage of impacts would be reduced by 47 acres, from 1,208 to 1,161 (see Table 4.3-1).

4.3.9 Alternative 6 – Reduced Footprint Solar Project

Alternative 6 would remain in the same location as Alternative 4 and would use the same project boundaries as Alternative 4 except that it would exclude the 155-acre southern parcel of the project and a small portion of the northern parcel that contains a sensitive plant species, Emory's crucifixion thorn, as shown on Figure 2-10, Alternative 6: Reduced Footprint Solar Project, in Appendix A. Alternative 6 would encompass 1,044 acres. The areas cleared of vegetation would be slightly less than for Alternative 4 (approximately100 acres). The area permanently covered by at-grade items would also be slightly reduced from Alternative 4 (less than 10 acres). Because Alternative 6 would not require use of two separate parcels of land, the alternative would not require an underground electrical connection across the wash. Alternative 6 would not incorporate any substantial changes to construction, operations, maintenance, or decommissioning from those described for Alternative 4.

Construction

Direct Effects

Direct effects to vegetation resources during construction of Alternative 6 would be as described in Section 4.3.7 for the direct construction effects of Alternative 4, except that the acreage of impacts would be reduced by 164 acres, from 1,208 to 1,044 (see Table 4.3-1) and direct impacts to Emory's crucifixion thorn would be avoided. Impacts to Blue Palo Verde–Ironwood Woodland (Desert Dry Wash Woodland) would be substantially reduced, from 180 to 98 acres (a 46 percent reduction in impacts). The Blue Palo Verde–Ironwood Woodland (Desert Dry Wash Woodland) is a special-status plant community; it provides habitat elements and structure not available in surrounding Creosote Bush Scrub (Sonoran Desert Scrub); and is closely associated with state-jurisdictional streambeds and episodic hydrologic systems. Impacts to state-jurisdictional streambeds would be reduced from 113 acres to 79 acres under Alternative 6. Total impacts to state jurisdictional areas would be reduced from 258.5 to 163.5 acres.

Indirect Effects

Indirect effects to vegetation resources during construction of Alternative 6 would be as described in Section 4.3.7 for the indirect construction effects of Alternative 4.

Operation and Maintenance

Direct Effects

Direct effects to vegetation resources during O&M of Alternative 6 would be as described in Section 4.3.7 for the direct O&M effects of Alternative 4.

Indirect Effects

Indirect effects to vegetation resources during O&M of Alternative 6 would be as described in Section 4.3.7 for the indirect O&M effects of Alternative 4.

Decommissioning

Direct Effects

Direct effects to vegetation resources during decommissioning of Alternative 6 would be as described in Section 4.3.7 for the direct decommissioning effects of Alternative 4.

Indirect Effects

Indirect effects to vegetation resources during decommissioning of Alternative 6 would be as described in Section 4.3.7 for the indirect decommissioning effects of Alternative 4.

Mitigation Measures

Required mitigation measures to reduce or minimize impacts of Alternative 6 to vegetation resources are the same as those required in this Section 4.3.7 for Alternative 4, with the following two exceptions: (1) the wording of MM VEG-6 would be unchanged, but the total compensation acreage requirement for Blue Palo Verde–Desert Ironwood Woodlands (Desert Dry Wash Woodland) would be reduced in proportion to the 82-acre (46%) reduction in impacts to this community; and (2) MM VEG-7 would not apply because the project design would avoid direct impacts to Emory's crucifixion thorn.

Residual Impacts and Unavoidable Adverse Effects

Residual effects of Alternative 6 to vegetation resources would be as described in Section 4.3.7 for the residual effects of Alternative 4, except that the acreage of impacts would be reduced by 164 acres, from 1,208 to 1,044 (see Table 4.3-1).

4.3.10 Alternative 7 – High-Profile Reduced Footprint Solar Project

Alternative 7 would be constructed within the same project boundaries as Alternative 6. Alternative 7 would encompass an estimated 1,044 acres and would be an estimated 150 MW nominal capacity project. Project details are the same as for Alternative 4, with the only exception being the overall height of the panels for Alternative 7. Alternative 7 would use high-profile single-axis tracking panels that would have a total height of 15 feet. The areas cleared of vegetation would be slightly less than for Alternative 4 (about 100 acres). The area permanently covered by at-grade items would also be slightly reduced from Alternative 4 (less than 10 acres). Because Alternative 7 would not require use of two separate parcels of land, the alternative would not require an underground electrical connection across the wash. Alternative 7 would not incorporate any substantial changes to construction, operations, maintenance, or decommissioning from those described for Alternative 4.

Construction

Direct Effects

Direct effects to vegetation resources during construction of Alternative 7 would be as described in Section 4.3.7 for the direct construction effects of Alternative 4, except that the acreage of impacts would be reduced by 164 acres, from 1,208 to 1,044 (see Table 4.3-1) and direct impacts to crucifixion thorn would be avoided. Impacts to Blue Palo Verde–Ironwood Woodland (Desert Dry Wash Woodland) would be substantially reduced, from 180 to 98 acres (a 46 percent reduc-

tion in impacts). The Blue Palo Verde–Ironwood Woodland (Desert Dry Wash Woodland)is a special-status plant community; it provides habitat elements and structure not available in surrounding Creosote Bush Scrub (Sonoran Desert Scrub); and is closely associated with state-jurisdictional streambeds and episodic hydrologic systems. Impacts to state-jurisdictional streambeds would be reduced from 113 acres to 79 acres under Alternative 7. Total impacts to state jurisdictional areas would be reduced from 258.5 to 163.5 acres.

Indirect Effects

Indirect effects to vegetation resources during construction of Alternative 7 would be as described in Section 4.3.7 for the indirect construction effects of Alternative 4.

Operation and Maintenance

Direct Effects

Direct effects to vegetation resources during O&M of Alternative 7 would be as described in Section 4.3.7 for the direct O&M effects of Alternative 4.

Indirect Effects

Indirect effects to vegetation resources during O&M of Alternative 7 would be as described in Section 4.3.7 for the indirect O&M effects of Alternative 4.

Decommissioning

Direct Effects

Direct effects to vegetation resources during decommissioning of Alternative 7 would be as described in Section 4.3.7 for the direct decommissioning effects of Alternative 4.

Indirect Effects

Indirect effects to vegetation resources during decommissioning of Alternative 7 would be as described in Section 4.3.7 for the indirect decommissioning effects of Alternative 4.

Mitigation Measures

Required mitigation measures to reduce or minimize impacts of Alternative 7 to vegetation resources are the same as those required in this Section 4.3.7 for Alternative 4, with the following two exceptions: (1) the wording of MM VEG-6 would be unchanged, but the total compensation acreage requirement for Blue Palo Verde–Desert Ironwood Woodlands (Desert Dry Wash Woodland) would be reduced in proportion to the 82-acre (46%) reduction in impacts to this community; and (2) MM VEG-7 would not apply because the project design would avoid direct impacts to Emory's crucifixion thorn.

Residual Impacts and Unavoidable Adverse Effects

Residual effects of Alternative 7 to vegetation resources would be as described in Section 4.3.7 for the residual effects of Alternative 4, except that the acreage of impacts would be reduced by 164 acres, from 1,208 to 1,044 (see Table 4.3-1).

4.3.11 Alternative A – No Gen-Tie

This No Action Alternative under NEPA defines the scenario that would exist if the proposed gen-tie line were not constructed and no plan amendment was issued. If this No Action Alternative were selected, the impacts of project construction, operation, decommissioning; as well as cumulative impacts of the project's gen-tie line, would not occur. There would be no project-related disturbance of the ground at the tower locations and pull sites, no disturbance of desert vegetation and habitat, and no installation of transmission equipment.

4.3.12 Alternative B – Proposed Gen-Tie (Shared Towers)

Alternative B is the Applicant's proposed gen-tie, which would utilize transmission infrastructure to be developed for the adjacent Desert Sunlight Solar Farm Project by sharing the approved transmission ROW and the gen-tie towers (see Figure 2-11 in Appendix A). At the time of commencement of analysis for this EIS in September, 2011, the Desert Sunlight approved gen-tie has not yet been constructed; therefore, the effects of constructing, operating, and decommissioning gen-tie Alternative B are analyzed here without the presumption that the approved Desert Sunlight gen-tie would be built. Please see the Cumulative Impacts section, below, for a separate analysis of the cumulative impacts of gen-tie Alternative B and the approved Desert Sunlight gen-tie. Implementation of Alternative B, as it is described and analyzed here, would require independent construction, operation, and decommissioning of this transmission line.

The proposed gen-tie right-of-way (ROW) is 12.1 miles long and 160 feet wide, totaling 235 acres. Construction disturbances within the ROW would include construction of new permanent or temporary access roads; 73 transmission structures; 5 splicing/pull sites; and 20 guard structures. The specific locations of these project components have not been determined. The materials and equipment staging areas and lay-down areas would be located within the solar facility site, and no additional habitat disturbance would be needed for these project components (see Chapter 2). The Applicant estimates total anticipated disturbance to vegetation for gen-tie Alternative B as 92 acres. Based on the proportions of each vegetation type along the alignment, this analysis estimates that 41 acres of Creosote Bush Scrub (Sonoran Desert Scrub) and 51 acres of Blue Palo Verde–Ironwood Woodland (Desert Dry Wash Woodland) would be impacted by permanent or long-term project disturbances.

In this analysis, an impact that might be considered temporary in other parts of California will be considered long-term or permanent due to these very slow natural recovery rates (see Section 4.3.1). Examples of permanent impacts of gen-tie line construction to vegetation include any new, permanent access roads and the footprints of new towers. Other ground disturbance restricted solely to the construction phase, such as grading roads and clearing vegetation within staging and pulling areas, are analyzed here as long-term impacts, with requirements for mitigation appropriate to the long-term nature of the disturbance.

Construction

Construction activities associated with Alternative B could directly affect vegetation, special-status plants, and jurisdictional resources through the long-term and permanent loss and degradation of native vegetation and its habitat values, loss of special-status plants, and loss or alteration of jurisdictional streambeds and associated habitat values. These effects, and mitigation measures to reduce the severity of these effects, are discussed below.

Direct Effects

Native Vegetation Including Sensitive Natural Communities. Site preparation and project construction on the proposed gen-tie line would consist of removing or crushing vegetation where necessary, such as along the access roads and tower work sites. Project construction would cause substantial degradation to native vegetation and wildlife habitat. Project construction would result in permanent and long-term impacts to 92 acres of natural vegetation, including 41 acres of Creosote Bush Scrub (Sonoran Desert Scrub) and 51 acres of Blue Palo Verde–Ironwood Woodland (Desert Dry Wash Woodland). Construction traffic and related activities would also cause increased wind erosion and downwind dust, as described in Section 4.3.7. The direct construction impacts to vegetation can be reduced through implementation of required Mitigation Measures VEG-1 through MM VEG-6.

Special-Status Plants. One desert unicorn-plant occurrence was documented on the alignment of gen-tie Alternative B during field surveys for the Desert Sunlight Solar Farm Project (BLM 2011a). Depending on the placement of poles and other work sites, construction of Alternative B could remove that occurrence. Due to the natural history of desert unicorn-plant (perennial herb; sprouts above-ground every few years in response to warm season rains), it is likely that additional, undocumented locations exist along the alignment. Thus, construction of Alternative B could affect additional desert unicorn-plant locations. Desert unicorn-plant is ranked as CRPR 4, and is not a BLM Sensitive Species (see Section 3.3). The impacts to this species, while adverse, would not warrant further mitigation.

State-Jurisdictional Streambeds. Construction of gen-tie Alternative B would impact state-jurisdictional streambeds, as well as the adjacent riparian vegetation (i.e., Blue Palo Verde–Desert Ironwood Woodland, or Desert Dry Wash Woodland) along much of its length. Actual acreage of these impacts would depend on the specific placement of poles and other work sites, but is estimated as 51 acres, based on the proportion of Blue Palo Verde–Ironwood Woodlands (Desert Dry Wash Woodland) along the alignment. Native vegetation would be removed or degraded from these streambed and woodland areas, as described for the proposed solar project. The streambeds would continue to convey water and sediment downslope, but habitat suitability for most native wildlife species would be degraded. These impacts would be offset by implementing Mitigation Measures VEG-1 through MM VEG-6. In addition, implementation of Mitigation Measure VEG-8 (Implement Best Management Practices to Minimize Impacts to Jurisdictional Areas) would minimize adverse effects of construction activities to jurisdictional streambeds on-site and off-site.

Indirect Effects

Invasive Weeds. In addition to the direct impacts to vegetation, construction of gen-tie Alternative B could have indirect effects to native vegetation, special-status plants, and jurisdictional streambeds off-site, through the introduction or spread of invasive weeds. These impacts are similar to those described in Section 4.3.7 for Alternative 4, but the effects of weed introductions could be proportionally more severe due to the linear nature of the project component.

Weeds are relatively low in abundance and diversity throughout gen-tie Alternative B alignment. However, construction would be expected to introduce or facilitate the spread of invasive non-native plants, including weeds noted on the site during field surveys (Section 3.3) or weeds new to the area. This potential impact would be minimized by Mitigation Measure VEG-9 (Prepare

and Implement an Integrated Weed Management Plan), which would require the project owner to monitor weed occurrence throughout the project area, and to control substantial weed infestations.

Hydrology and Groundwater. Construction of Alternative B could affect off-site vegetation, particularly the Blue Palo Verde–Desert Ironwood Woodlands (Desert Dry Wash Woodland) downstream of work sites, by altering water quality or surface hydrology. If pollutants, silt, or other materials are carried off-site by intermittent stream flows, they could be deposited in downstream washes or could enter the soil or groundwater, where they could adversely affect native woodland vegetation. Implementation of a SWPP (see Section 4.22, Water Resources) and Mitigation Measure VEG-8 (Implement Best Management Practices to Minimize Impacts to Jurisdictional Areas) during construction would reduce these impacts. Construction of Alternative B would necessitate water use for dust control, but total water usage is expected to be relatively small by comparison with the solar facility site, and no additional impacts to groundwater-dependent vegetation would be expected.

Operation and Maintenance

Operations and maintenance activities associated with Alternative B could directly affect vegetation, special-status plants, and jurisdictional resources due to long-term habitat alteration by access road maintenance (including roadside vegetation management), periodic gen-tie line inspections or maintenance, and consequent dust and other soil disturbances, and ongoing potential to introduce new weed species or facilitate the spread of existing species.

Direct Effects

Native Vegetation Including Sensitive Natural Communities. Gen-tie line vegetation management during operations would necessitate periodic mowing, weeding, or other vegetation control for compatibility with road access and gen-tie operations. Overall impacts of these O&M procedures would prevent recovery of native vegetation and wildlife habitat throughout the life of the project. Disturbed vegetation on the alignment would remain degraded from natural conditions throughout the life of the project, with reduced abundance, cover and height of native shrubs; reduced overall vegetation cover; and increased relative cover of non-native species. These long-term impacts to vegetation can be reduced through implementation of required Mitigation Measures VEG-1 through MM VEG-6. These measures would limit the initial disturbance areas and avoid off-site habitat degradation; require vegetation management on-site to minimize adverse off-site impacts, and require off-site compensation for habitat lost or degraded throughout the life of the project.

Special-Status Plants. Gen-tie line O&M would not affect any special-status plants beyond those that are removed or damaged during initial construction. However, vegetation management for gen-tie operation could cause accidental off-site impacts, due to dust or herbicide drift or off-site hydrology impacts. Mitigation Measures VEG-5 (Prepare and Implement a Vegetation Resources Management Plan) and MM VEG-9 (Prepare and Implement an Integrated Weed Management Plan) would minimize these impacts throughout the life of the project.

State-Jurisdictional Streambeds. Operation and maintenance of the gen-tie would maintain streambeds and associated habitat values throughout the disturbed areas in degraded condition that would no longer provide suitable habitat for most native wildlife species. These impacts

would be offset by implementing Mitigation Measures VEG-1 through MM VEG-6. In addition, implementation of Mitigation Measure VEG-8 (Implement Best Management Practices to Minimize Impacts to Jurisdictional Areas) would minimize adverse effects of O&M practices to jurisdictional streambeds on-site and off-site.

Indirect Effects

In addition to the direct impacts to vegetation, gen-tie operation could have several indirect impacts to native vegetation, special-status plants, and jurisdictional streambeds off-site, including introduction or spread of invasive weeds.

Invasive Weeds. Operation and maintenance of gen-tie Alternative B would be expected to introduce or facilitate the spread of invasive non-native plants, including weeds noted on the site during field surveys (Section 3.3) or weeds new to the area. This potential impact would be minimized by Mitigation Measure VEG-9 (Prepare and Implement an Integrated Weed Management Plan).

Hydrology and Groundwater. O&M activities associated with gen-tie Alternative B could affect off-site vegetation, particularly the Blue Palo Verde–Desert Ironwood Woodlands (Desert Dry Wash Woodland) downstream of the alignment, by altering water quality or surface hydrology. If pollutants, silt, or other materials are carried off-site by intermittent stream flows, they could be deposited in downstream washes or could enter the soil or groundwater, where they could adversely affect native woodland vegetation. Implementation of Mitigation Measure VEG-8 (Implement Best Management Practices to Minimize Impacts to Jurisdictional Areas) would reduce these impacts.

Decommissioning

Decommissioning of the gen-tie is summarized in Chapter 2. The expected operational lifetime of the DHSP is 30 years; however its actual life could be longer or shorter. When permanent closure is appropriate, a decommissioning plan will be prepared and submitted to the BLM for review and approval. The decommissioning plan will address the gen-tie as well as the solar facility. Closure strategies may include temporary “mothballing”; removing old facilities and upgrading to newer solar technology; or complete removal of equipment and restoration of the land to BLM approved specifications. Fully decommissioning the site would involve (1) removal and demolition of above-ground structures; (2) dismantling and removing concrete structures to a 3-foot depth; (3) removal of underground utilities within 3 feet of final grade; and (4) excavation and removal of soils, if applicable (see Sections 2.4.6 and 2.9.4).

Impacts to vegetation resources would vary, according to the decommissioning strategy and the intended re-use of the alignment, to be developed prior to actual decommissioning.

Direct Effects

Facilities removal during decommissioning would be expected to take place within the prior-disturbed work areas, addressed as long-term construction impacts in this analysis. Removal or degradation of native vegetation, special-status plants, or state-jurisdictional streambeds would be limited to areas where those resources had recovered naturally or through implementation of the project owner’s Vegetation Resources Management Plan (per Mitigation Measure VEG-5). Any potential direct impacts beyond the work areas would be limited to the effects of dust or

similar direct off-site impacts, as discussed above (direct effects of construction). These decommissioning impacts can be reduced through implementation of required Mitigation Measures VEG-1 through MM VEG-6, which are required also for decommissioning. In particular, Mitigation Measure VEG-5 (Prepare and Implement a Vegetation Resources Management Plan) requires the project owner to prepare and implement a supplement to the Vegetation Resources Management Plan during decommissioning, to be as compatible with the proposed re-use of the site and the other components of the decommissioning plan. If the ultimate re-use of the alignment is to return it to natural open space, then the expected recontouring and replanting during decommissioning would have a net benefit to vegetation resources. This potential beneficial impact cannot be evaluated at this time, pending the final re-use decision and the details of the decommissioning plan.

Indirect Effects

The indirect effects of decommissioning to vegetation resources would be similar to the indirect effects described above for project construction. These indirect effects would include the potential for introduction or spread of invasive weeds; and effects to downstream hydrology and associated vegetation. These impacts would be minimized by Mitigation Measures VEG-8 (Implement Best Management Practices to Minimize Impacts to Jurisdictional Areas) and MM VEG-9 (Prepare and Implement an Integrated Weed Management Plan).

Mitigation Measures

Required mitigation measures to reduce or minimize impacts of Alternative B to vegetation resources are the same as those required in this Section 4.3.7 for Alternative 4, with the following two exceptions: (1) MM VEG-7 would not apply because the alignment would avoid direct impacts to Emory's crucifixion thorn; and (2) MM VEG-10 would not apply because construction, operation, and maintenance of the gen-tie line would not be expected to affect groundwater-dependent vegetation.

Residual Impacts and Unavoidable Adverse Effects

Some of the mitigation measures described above would mitigate adverse impacts to vegetation resources by preventing the impacts from occurring. For example, MM VEG-9 (Prepare and Implement an Integrated Weed Management Plan) would prevent the introduction and spread of invasive weeds. Other mitigation measures would minimize adverse impacts on the project site and prevent them in adjacent off-site habitats, such as MM VEG-8 (Implement Best Management Practices to Minimize Impacts to Jurisdictional Areas). MM VEG-6 (Provide Off-Site Compensation for Impacts to Vegetation and Habitat) requires acquisition and management of off-site vegetation and habitat in perpetuity to offset the permanent loss of vegetation and habitat associated with the project. This measure, while compensating for impacts to vegetation resources, would not prevent those impacts from occurring. With the implementation of Mitigation Measures VEG-1 through MM VEG-9 (excluding MM VEG-7) residual impacts to vegetation resources would be (1) the net loss of vegetation and habitat on the alignment; (2) the direct effects of dust and other disturbances to adjacent off-site habitat during construction, operation, and decommissioning of the gen-tie line; and (3) the net loss of state-jurisdictional streambeds on the alignment. These impacts are described above, under direct impacts of project construction.

4.3.13 Alternative C – Separate Transmission Towers within Same ROW

Alternative C would parallel the approved (but not yet constructed) Desert Sunlight gen-tie line, and would be located on separate towers within the same, or a slightly larger, ROW (Figure 2-14 in Appendix A). Because Alternative B, above, is described and analyzed in Section 4.3.12 as a stand-alone alternative (i.e., without the presumption that the Desert Sunlight gen-tie would be built), the Alternative C design, construction, and impacts would be the same as described for Alternative B. The Alternative C alignment would be the same as Alternative B but would be located approximately 100 feet west of the Desert Sunlight towers. The estimated area of permanent and long-term impacts for Alternative C is 92 acres. Based on the proportions of each vegetation type along the alignment, this analysis estimates that 41 acres of Creosote Bush Scrub (Sonoran Desert Scrub) and 51 acres of Blue Palo Verde–Ironwood Woodland (Desert Dry Wash Woodland) would be impacted by permanent or long-term project disturbances.

Construction

Direct Effects

Direct effects to vegetation resources during construction of Alternative C would be as described in Section 4.3.12 for the direct construction effects of Alternative B.

Indirect Effects

Indirect effects to vegetation resources during construction of Alternative C would be as described in Section 4.3.12 for the indirect construction effects of Alternative B.

Operation and Maintenance

Direct Effects

Direct effects to vegetation resources during O&M of Alternative C would be as described in Section 4.3.12 for the direct construction effects of Alternative B.

Indirect Effects

Indirect effects to vegetation resources during O&M of Alternative C would be as described in Section 4.3.12 for the indirect construction effects of Alternative B.

Decommissioning

Direct Effects

Direct effects to vegetation resources during decommissioning of Alternative C would be as described in Section 4.3.12 for the direct construction effects of Alternative B.

Indirect Effects

Indirect effects to vegetation resources during decommissioning of Alternative C would be as described in Section 4.3.12 for the indirect construction effects of Alternative B.

Mitigation Measures

Required mitigation measures to reduce or minimize impacts of Alternative C to vegetation resources are the same as those required in this Section 4.3.7 for Alternative 4, with the following two exceptions: (1) MM VEG-7 would not apply because the alignment would avoid direct impacts to Emory's crucifixion thorn; and (2) MM VEG-10 would not apply because construction, operation, and maintenance of the gen-tie line would not be expected to affect groundwater-dependent vegetation.

Residual Impacts and Unavoidable Adverse Effects

With the implementation of Mitigation Measures VEG-1 through MM VEG-9 (excluding MM VEG-7), residual impacts to vegetation resources would be (1) the net loss of vegetation and habitat on the alignment; (2) the direct effects of dust and other disturbances to adjacent off-site habitat during construction, operation, and decommissioning of the gen-tie line; and (3) the net loss of state-jurisdictional streambeds on the alignment. These impacts are described above, under direct impacts of project construction.

4.3.14 Alternative D – Cross-Valley Alignment

The DHSP gen-tie line Alternative D is the same alignment that was analyzed as the Desert Sunlight gen-tie alignment Alternative A-2 (BLM 2011). Gen-tie Alternative D would parallel the approved Desert Sunlight gen-tie line for approximately 2,400 feet along the east side of Kaiser Road until intersecting with the existing SCE transmission line ROW. At that point, it would turn southeast and run parallel to the existing transmission ROW for 7.2 miles, then turn south for 0.6 mile, continuing due west for 0.5 mile until it turns south across I-10 and continues approximately 1,000 feet (not along any existing feature) to Red Bluff Substation (see Figure 2-15 in Appendix A). The centerline of gen-tie alternative D would be located 140 to 150 feet from the centerline of the existing SCE line, but the new gen-tie alignment would not be within the SCE ROW.

The gen-tie Alternative D ROW would be 10.5 miles long and 160 feet wide, totaling 204 acres. Construction disturbances within the ROW would be similar to those described above for gen-tie Alternative B (Section 4.3.12), including construction of any new permanent or temporary access roads; transmission structures; splicing/pull sites; and guard structures. Please also refer to the discussion of temporary, long-term, and permanent disturbances in Section 4.3.12. The specific locations and numbers of these project components have not been determined. The materials and equipment staging areas and lay-down areas would be located within the solar facility site, and no additional habitat disturbance would be needed for these project components (see Chapter 2). The Applicant has estimated total disturbance to soils and vegetation for gen-tie Alternative D as 86 acres. Based on the proportions of each vegetation type along the alignment, this analysis estimates that 20 acres of Creosote Bush Scrub (Sonoran Desert Scrub), 39 acres of Blue Palo Verde–Ironwood Woodland (Desert Dry Wash Woodland), and 27 acres of disturbed lands (including disused agricultural lands) would be impacted by permanent or long-term disturbances.

Construction

Construction activities associated with Alternative D could directly affect vegetation, special-status plants, and jurisdictional resources through the long-term and permanent loss and degrada-

tion of native vegetation and its habitat values, loss of special-status plants, and loss or alteration of jurisdictional streambeds and associated habitat values. These effects, and mitigation measures to reduce the severity of these effects, are discussed below.

Direct Effects

Native Vegetation Including Sensitive Natural Communities. Site preparation and project construction on the proposed gen-tie line would consist of removing or crushing vegetation where necessary, such as along the access roads and tower work sites. Project construction would cause substantial degradation to native vegetation and wildlife habitat. Project construction would result in permanent and long-term impacts to 86 acres of vegetation, including 20 acres of Creosote Bush Scrub (Sonoran Desert Scrub), 39 acres of Blue Palo Verde–Ironwood Woodland (Desert Dry Wash Woodland) and 27 acres of disused agricultural lands. Construction traffic and related activities would also cause increased wind erosion and downwind dust, as described in Section 4.3.7. The direct construction impacts to vegetation can be reduced through implementation of required Mitigation Measures VEG-1 through MM VEG-6.

Special-Status Plants. Two Emory's crucifixion thorn and one desert unicorn-plant occurrence were documented on the alignment of gen-tie Alternative D during field surveys for the Desert Sunlight Solar Farm Project (BLM 2011). Depending on the placement of poles and other work sites, construction of Alternative D could remove those special-status plant occurrences. Due to the natural history of desert unicorn-plant (perennial herb; sprouts above-ground every few years, in response to warm season rains), it is likely that additional, undocumented locations exist along the alignment. Thus, construction of Alternative D could affect additional desert unicorn-plant locations. Desert unicorn-plant is ranked as CRPR 4, and is not a BLM Sensitive Species (see Section 3.3). The impacts to this species, while adverse, would not warrant further mitigation. Impacts to Emory's crucifixion thorn, if they are not avoided by placement of project components, would be mitigated through implementation of required Mitigation Measure VEG-7 (Mitigate Direct Impacts to Special-Status Plants).

State-Jurisdictional Streambeds. Construction of gen-tie Alternative D would impact state-jurisdictional streambeds, as well as the adjacent riparian vegetation (i.e., Blue Palo Verde–Desert Ironwood Woodland, or Desert Dry Wash Woodland) along portions of its length. Actual acreage of these impacts would depend on the specific placement of poles and other work sites, but is estimated at 39 acres, based on the proportion of Blue Palo Verde–Ironwood Woodlands (Desert Dry Wash Woodland) along the alignment. Native vegetation would be removed or degraded from these streambed and woodland areas. The streambeds would continue to convey water and sediment downslope, but habitat suitability for most native wildlife species would be degraded. These impacts would be offset by implementing Mitigation Measures VEG-1 through MM VEG-6. In addition, implementation of Mitigation Measure VEG-8 (Implement Best Management Practices to Minimize Impacts to Jurisdictional Areas) would minimize adverse effects of construction practices to jurisdictional streambeds on-site and off-site.

Indirect Effects

Invasive Weeds. In addition to the direct impacts to vegetation, construction of gen-tie Alternative D could have indirect effects to native vegetation, special-status plants, and jurisdictional streambeds off-site, through the introduction or spread of invasive weeds. These impacts are

similar to those described in Section 4.3.7 for Alternative 4, but the effects of weed introductions could be proportionally more severe due to the linear nature of the project component.

Weeds are relatively low in abundance and diversity throughout gen-tie Alternative D alignment, but generally more abundant than the other gen-tie alignments due to the larger area of disused agricultural lands on Alternative D. Construction would be expected to introduce or facilitate the spread of invasive non-native plants, including weeds noted on the site during field surveys (Section 3.3) or weeds new to the area. This potential impact would be minimized by Mitigation Measure VEG-9 (Prepare and Implement an Integrated Weed Management Plan), which would require the project owner to monitor weed occurrence throughout the project area, and to control substantial weed infestations.

Hydrology and Groundwater. Construction of Alternative D could affect off-site vegetation, particularly the Blue Palo Verde–Desert Ironwood Woodlands (Desert Dry Wash Woodland) downstream of work sites, by altering water quality or surface hydrology. If pollutants, silt, or other materials are carried off-site by intermittent stream flows, they could be deposited in downstream washes or could enter the soil or groundwater, where they could adversely affect native woodland vegetation. Implementation of a SWPP (see Section 4.22, Water Resources) and Mitigation Measure VEG-8 (Implement Best Management Practices to Minimize Impacts to Jurisdictional Areas) during construction would reduce these impacts. Construction of Alternative D would necessitate water use for dust control, but total water usage is expected to be relatively small by comparison with the solar facility site, and no additional impacts to groundwater-dependent vegetation would be expected.

Operation and Maintenance

O&M activities associated with Alternative D could directly affect vegetation, special-status plants, and jurisdictional resources due to long-term habitat alteration by access road maintenance (including roadside vegetation management), periodic gen-tie line inspections or maintenance, and consequent dust and other soil disturbances, and ongoing potential to introduce new weed species or facilitate the spread of existing species.

Direct Effects

Native Vegetation Including Sensitive Natural Communities. Overall impacts of gen-tie line vegetation management during operations would be similar to those described for gen-tie Alternative B (Section 4.3.12). These long-term impacts to vegetation can be reduced through implementation of required Mitigation Measures VEG-1 through MM VEG-6. These measures would limit the initial disturbance areas and avoid off-site habitat degradation; require vegetation management on-site to minimize adverse off-site impacts, and require off-site compensation for habitat lost or degraded throughout the life of the project.

Special-Status Plants. O&M activities associated with the gen-tie line would be similar to those described above for gen-tie Alternative B (Section 4.3.12). Mitigation Measures VEG-5 (Prepare and Implement a Vegetation Resources Management Plan) and MM VEG-9 (Prepare and Implement an Integrated Weed Management Plan) would minimize these impacts throughout the life of the project.

State-Jurisdictional Streambeds. O&M of the gen-tie line would maintain streambeds and associated habitat values throughout the disturbed areas in degraded condition that would no longer provide suitable habitat for most native wildlife species. These impacts would be offset by implementing Mitigation Measures VEG-1 through MM VEG-6. In addition, implementation of Mitigation Measure VEG-8 (Implement Best Management Practices to Minimize Impacts to Jurisdictional Areas) would minimize adverse effects of O&M practices to jurisdictional streambeds on-site and off-site.

Indirect Effects

In addition to the direct impacts to vegetation, gen-tie operation could have several indirect impacts to native vegetation, special-status plants, and jurisdictional streambeds off-site, including introduction or spread of invasive weeds.

Invasive Weeds. Operation and maintenance of gen-tie Alternative D would be expected to introduce or facilitate the spread of invasive non-native plants as described for gen-tie Alternative B (Section 4.3.12). This potential impact would be minimized by Mitigation Measure VEG-9 (Prepare and Implement an Integrated Weed Management Plan).

Hydrology and Groundwater. Gen-tie Alternative D O&M could affect off-site vegetation, particularly the Blue Palo Verde–Desert Ironwood Woodlands (Desert Dry Wash Woodland) downstream of the alignment, as described for gen-tie Alternative B (Section 4.3.12). Implementation of Mitigation Measure VEG-8 (Implement Best Management Practices to Minimize Impacts to Jurisdictional Areas) would reduce these impacts.

Decommissioning

Impacts to vegetation resources during decommissioning of gen-tie Alternative D would be similar to the decommissioning summary for Alternative B in Section 4.3.12. When permanent closure is appropriate, a decommissioning plan will be prepared and submitted to the BLM for review and approval. The decommissioning plan will address the gen-tie as well as the solar facility. Impacts to vegetation resources would vary, according to the decommissioning strategy and the intended re-use of the alignment, to be developed prior to actual decommissioning.

Direct Effects

Direct effects of decommissioning gen-tie line Alternative D would be as described for Alternative B. These decommissioning impacts can be reduced through implementation of required Mitigation Measures VEG-1 through MM VEG-6. If the ultimate re-use of the alignment is to return it to natural open space, then the expected recontouring and replanting during decommissioning would have a net benefit to vegetation resources. This potential beneficial impact cannot be evaluated at this time, pending the final re-use decision and the details of the decommissioning plan.

Indirect Effects

The indirect effects of decommissioning to vegetation resources would be similar to the indirect effects described above for project construction. These indirect effects would include the potential for introduction or spread of invasive weeds; and effects to downstream hydrology and associated vegetation. These impacts would be minimized by Mitigation Measures VEG-8

(Implement Best Management Practices to Minimize Impacts to Jurisdictional Areas) and MM VEG-9 (Prepare and Implement an Integrated Weed Management Plan).

Mitigation Measures

Required mitigation measures to reduce or minimize impacts of Alternative D to vegetation resources are the same as those required in this Section 4.3.7 for Alternative 4, with the following exception: MM VEG-10 would be deleted because construction, operation, and maintenance of the gen-tie line would not be expected to affect groundwater-dependent vegetation.

Residual Impacts and Unavoidable Adverse Effects

With the implementation of Mitigation Measures VEG-1 through MM VEG-9, residual impacts to vegetation resources would be (1) the net loss of vegetation and habitat on the alignment; (2) the direct effects of dust and other disturbances to adjacent off-site habitat during construction, operation, and decommissioning of the gen-tie line; (3) the net loss of special-status plant occurrences on the alignment; and (4) the net loss of state-jurisdictional streambeds on the alignment. These impacts are described above, under direct impacts of construction.

4.3.15 Alternative E – New Cross-Valley Alignment

Gen-tie Alternative E would be a new ROW alignment across the Chuckwalla Valley (Figure 2-16 in Appendix A). It would not follow any existing or approved utility or road ROW. Alternative E would exit the south side of the solar facility site; follow a broad unnamed wash toward the southeast, cross Highway 177, continue to the east into the Palen-Ford WHMA, and then south, then turn back to the west to reach the Red Bluff Substation.

The gen-tie Alternative E ROW would be 11.4 miles long and 160 feet wide, totaling 221 acres. Construction disturbances within the ROW would be similar to those described above for gen-tie Alternative B (Section 4.3.12), including construction of any new permanent or temporary access roads; transmission structures; splicing/pull sites; and guard structures. Please also refer to the discussion of temporary, long-term, and permanent disturbances in Section 4.3.12. The specific locations and numbers of these project components have not been determined. The materials and equipment staging areas and lay-down areas would be located within the solar facility site, and no additional habitat disturbance would be needed for these project components (see Chapter 2). The Applicant has estimated total disturbance to soils and vegetation for gen-tie Alternative E as 85 acres.

Gen-tie Alternative E is the only Alternative or project component that would affect windblown sand habitat, and possibly special-status plants of that habitat, as described in Section 3.3. Based on the proportions of each vegetation type along the alignment, this analysis estimates that 5 acres of Creosote Bush Scrub (Sonoran Desert Scrub) on bajada and alluvial landforms, 13 acres of Creosote Bush Scrub (Sonoran Desert Scrub) on partially stabilized sandfields, 7 acres of active sand dunes, and 60 acres of Blue Palo Verde–Ironwood Woodland (Desert Dry Wash Woodland) would be impacted by permanent or long-term disturbances.

Construction

Construction activities associated with Alternative E could directly affect vegetation, special-status plants, and jurisdictional resources through the long-term and permanent loss and degrada-

tion of native vegetation and its habitat values, loss of special-status plants, and loss or alteration of jurisdictional streambeds and associated habitat values. These effects, and mitigation measures to reduce the severity of these effects, are discussed below.

Direct Effects

Native Vegetation Including Sensitive Natural Communities. Site preparation and project construction on the proposed gen-tie line would consist of removing or crushing vegetation where necessary, such as along the access roads and tower work sites. Project construction would cause substantial degradation to native vegetation and wildlife habitat. Project construction would result in permanent and long-term impacts to 85 acres of vegetation, including 5 acres of Creosote Bush Scrub (Sonoran Desert Scrub) on bajada and alluvial landforms, 13 acres of Creosote Bush Scrub (Sonoran Desert Scrub) on partially stabilized sandfields, 7 acres of active sand dunes, and 60 acres of Blue Palo Verde–Ironwood Woodland (Desert Dry Wash Woodland). Construction traffic and related activities would also cause increased wind erosion and downwind dust. The direct construction impacts to vegetation can be reduced through implementation of required Mitigation Measures VEG-1 through MM VEG-6. Note that, for Alternative E, MM VEG-6 (Provide Off-Site Compensation for Impacts to Vegetation and Habitat) includes a requirement to compensate for impacts within the Palen-Ford WHMA at a 1:1 ratio (with the exception of sandfield, dune, and desert dry wash woodlands, which require compensation at a higher ratio), and that compensation lands must provide habitat values, including windblown and stabilized sand habitat, comparable to the affected habitat. Vegetation and habitat mapped as Creosote Bush Scrub (Sonoran Desert Scrub) on partially stabilized sand fields and active sand dunes, would be compensated at the 5:1 ratio and Blue Palo Verde–Ironwood Woodland (Desert Dry Wash Woodland) would be compensated at the 3:1 ratio.

Special-Status Plants. One Emory's crucifixion thorn was located near the alignment and 65 desert unicorn-plant occurrences were documented on or near the alignment of gen-tie Alternative E during fall field surveys for the DHSP (Section 3.3). Due to the natural history of desert unicorn-plant (perennial herb; sprouts above-ground every few years in response to warm season rains), it is likely that additional, undocumented locations exist along the alignment. Spring surveys of the alignment were conducted during spring 2012. Two additional special-status plants were documented on the Alternative E alignment: Harwood's woollystar and ribbed cryptantha (see Section 3.3).

Depending on the placement of poles and other work sites, construction of Alternative E could remove known special-status plant occurrences, or occurrences not yet documented. Harwood's woollystar is ranked as CRPR 1B; ribbed cryptantha and desert unicorn-plant are ranked as CRPR 4. Of these species, only Harwood's woollystar is a BLM Sensitive Species (see Section 3.3). Impacts to these species, excluding desert unicorn-plant, would either be avoided by placement of project components, or would be mitigated through implementation of Mitigation Measure VEG-7 (Mitigate Direct Impacts to Special-Status Plants), described in Section 4.3.7, above. Note that, for Alternative E, MM VEG-7 includes a requirement to evaluate and mitigate impacts to special-status aeolian sand plant species, which would not be necessary for the other gen-tie alternatives evaluated here.

State-Jurisdictional Streambeds. Construction of gen-tie Alternative E would impact state-jurisdictional streambeds, as well as the adjacent riparian vegetation (i.e., Blue Palo Verde–Desert Ironwood Woodlands, or Desert Dry Wash Woodland) along portions of its length. Actual acreage of these impacts would depend on the specific placement of poles and other work sites, but is estimated at 60 acres, based on the proportion of Blue Palo Verde–Ironwood Woodlands (Desert Dry Wash Woodland) along the alignment. Native vegetation would be removed or degraded from these streambed and woodland areas. The streambeds would continue to convey water and sediment downslope, but habitat suitability for most native wildlife species would be degraded. These impacts would be offset by implementing Mitigation Measures VEG-1 through MM VEG-6. In addition, implementation of Mitigation Measure VEG-8 (Implement Best Management Practices to Minimize Impacts to Jurisdictional Areas) would minimize adverse effects of construction practices to jurisdictional streambeds on-site and off-site.

Indirect Effects

Sand Transport. The gen-tie line structures and access road would cause small sand accumulations on the leeward sides of structures and on road margins. These would similar to the accumulations at the bases of shrubs (see Section 3.3). The structures and road margins would not be wide enough or tall enough to meaningfully interrupt aeolian sand transport in the local dune system or downwind to the Palen Dunes.

Invasive Weeds. In addition to the direct impacts to vegetation, construction of gen-tie Alternative E could have indirect effects to native vegetation, special-status plants, and jurisdictional streambeds off-site, through the introduction or spread of invasive weeds. These impacts are similar to those described in Section 4.3.7 for Alternative 4, but the effects of weed introductions could be proportionally more severe due to the linear nature of this project component.

Weeds are relatively low in abundance and diversity throughout gen-tie Alternative E alignment. Construction would be expected to introduce or facilitate the spread of invasive non-native plants, including weeds noted on the site during field surveys (Section 3.3) or weeds new to the area. This potential impact would be minimized by Mitigation Measure VEG-9 (Prepare and Implement an Integrated Weed Management Plan), which would require the project owner to monitor weed occurrence throughout the project area, and to control substantial weed infestations.

Hydrology and Groundwater. Construction of Alternative E could affect off-site vegetation, particularly the Blue Palo Verde–Desert Ironwood Woodlands (Desert Dry Wash Woodland) downstream of work sites, by altering water quality or surface hydrology. If pollutants, silt, or other materials are carried off-site by intermittent stream flows, they could be deposited in downstream washes or could enter the soil or groundwater, where they could adversely affect native woodland vegetation. Implementation of a SWPP (see Section 4.22, Water Resources) and Mitigation Measure VEG-8 (Implement Best Management Practices to Minimize Impacts to Jurisdictional Areas) during construction would reduce these impacts. Construction of Alternative E would necessitate water use for dust control, but total water usage is expected to be relatively small by comparison with the solar facility site, and no additional impacts to groundwater-dependent vegetation would be expected.

Operation and Maintenance

Operations and maintenance activities associated with Alternative E could directly affect vegetation, special-status plants, and jurisdictional resources due to long-term habitat alteration by access road maintenance (including roadside vegetation management), periodic gen-tie line inspections or maintenance, and consequent dust and other soil disturbances, and ongoing potential to introduce new weed species or facilitate the spread of existing species.

Direct Effects

Native Vegetation Including Sensitive Natural Communities. Overall impacts of gen-tie line vegetation management during operations would be similar to those described for gen-tie Alternative B (Section 4.3.12). These long-term impacts to vegetation can be reduced through implementation of required Mitigation Measures VEG-1 through MM VEG-6. These measures would limit the initial disturbance areas and avoid off-site habitat degradation; require vegetation management on-site to minimize adverse off-site impacts, and require off-site compensation for habitat lost or degraded throughout the life of the project.

Special-Status Plants. Gen-tie line O&M activities would be similar to those described above for gen-tie Alternative B (Section 4.3.12). Mitigation Measures VEG-5 (Prepare and Implement a Vegetation Resources Management Plan) and MM VEG-9 (Prepare and Implement an Integrated Weed Management Plan) would minimize these impacts throughout the life of the project.

State-Jurisdictional Streambeds. O&M of the gen-tie line would maintain streambeds and associated habitat values throughout the disturbed areas in degraded condition that would no longer provide suitable habitat for most native wildlife species. These impacts would be offset by implementing Mitigation Measures VEG-1 through MM VEG-6. In addition, implementation of Mitigation Measure VEG-8 (Implement Best Management Practices to Minimize Impacts to Jurisdictional Areas) would minimize adverse effects of O&M activities to jurisdictional streambeds on-site and off-site.

Indirect Effects

In addition to the direct impacts to vegetation, gen-tie operation could have several indirect impacts to native vegetation, special-status plants, and jurisdictional streambeds off-site, including introduction or spread of invasive weeds.

Invasive Weeds. O&M of gen-tie Alternative E would be expected to introduce or facilitate the spread of invasive non-native plants as described for gen-tie Alternative B (Section 4.3.12). This potential impact would be minimized by Mitigation Measure VEG-9 (Prepare and Implement an Integrated Weed Management Plan).

Hydrology and Groundwater. O&M of gen-tie Alternative E could affect off-site vegetation, particularly the Blue Palo Verde–Desert Ironwood Woodlands (Desert Dry Wash Woodland) downstream of the alignment, as described for gen-tie Alternative B (Section 4.3.12). Implementation of Mitigation Measure VEG-8 (Implement Best Management Practices to Minimize Impacts to Jurisdictional Areas) would reduce these impacts.

Decommissioning

Impacts to vegetation resources during decommissioning of gen-tie Alternative E would be similar to the decommissioning summary for Alternative B in Section 4.3.12. When permanent closure is appropriate, a decommissioning plan will be prepared and submitted to the BLM for review and approval. The decommissioning plan will address the gen-tie as well as the solar facility. Impacts to vegetation resources would vary, according to the decommissioning strategy and the intended re-use of the alignment, to be developed prior to actual decommissioning.

Direct Effects

Direct effects of decommissioning gen-tie line Alternative E would be as described for Alternative B. These decommissioning impacts can be reduced through implementation of required Mitigation Measures VEG-1 through MM VEG-6. If the ultimate re-use of the alignment is to return it to natural open space, then the expected recontouring and replanting during decommissioning would have a net benefit to vegetation resources. This potential beneficial impact cannot be evaluated at this time, pending the final re-use decision and the details of the decommissioning plan.

Indirect Effects

The indirect effects of decommissioning to vegetation resources would be similar to the indirect effects described above for project construction. These indirect effects would include the potential for introduction or spread of invasive weeds; and effects to downstream hydrology and associated vegetation. These impacts would be minimized by Mitigation Measures VEG-8 (Implement Best Management Practices to Minimize Impacts to Jurisdictional Areas) and MM VEG-9 (Prepare and Implement an Integrated Weed Management Plan).

Mitigation Measures

Required mitigation measures to reduce or minimize impacts of Alternative E to vegetation resources are the same as those required in this Section 4.3.7 for Alternative 4, with the following exception: MM VEG-10 would not apply because construction, operation, and decommissioning of the gen-tie line would not be expected to affect groundwater-dependent vegetation. Note that, for Alternative E, MM VEG-6 (Provide Off-Site Compensation for Impacts to Vegetation and Habitat) includes a requirement to compensate for impacts within the Palen-Ford WHMA at a 1:1 ratio, and that compensation lands must provide habitat values, including windblown and stabilized sand habitat, comparable to the affected habitat. Also, for Alternative E, MM VEG-7 includes a requirement to evaluate and mitigate impacts to special-status aeolian sand plant species, which would not be necessary for the other gen-tie alternatives evaluated here.

Residual Impacts and Unavoidable Adverse Effects

With the implementation of Mitigation Measures VEG-1 through MM VEG-9, residual impacts to vegetation resources would be (1) the net loss of vegetation and habitat on the alignment; (2) the direct effects of dust and other disturbances to adjacent off-site habitat during construction, operation, and decommissioning of the gen-tie line; (3) the net loss of special-status plant

occurrences on the alignment; and (4) the net loss of state-jurisdictional streambeds on the alignment. These impacts are described above, under direct impacts of construction.

4.3.16 Cumulative Effects

Geographic Scope

The "geographic scope" of the analysis of cumulative impacts to biological resources refers to the area within which cumulative impacts are likely to occur. For the proposed project, the majority of this cumulative effects analysis makes a broad, regional evaluation of the impacts of existing and reasonably foreseeable future projects that threaten plant communities within the context or geographic scope of the NECO Plan. The NECO planning area was selected as the geographical scope of the cumulative impacts analysis on vegetation communities and on special-status plant species because it is the California portion of the Sonoran Desert ecosystem. The NECO planning area, which is located in the southeastern CDCA, comprises 5.5 million acres of private, federal, and State land. The majority of the planning area land (3,823,194 acres, or 69 percent) is public land managed by BLM (BLM and CDFG 2002). It hosts 60 special-status plant and animal species.

The project is also located within the Palen Watershed which is a subset of the NECO planning area. For the cumulative impact analysis on sensitive vegetation communities (i.e., desert dry wash woodland) and jurisdictional resources, the Palen Watershed was selected as the geographical scope for this cumulative impacts analysis, given potential impacts at the watershed scale.

Project impacts related to biological resources could occur during the construction phase of the project, the planned 30-year operational life of the DHSP, and the decommissioning phase. This analysis considers these timeframes.

Table 4.3-5. Cumulative Projects within the Geographic Scope of Cumulative Analysis

Resource Area / BLM Program Area	Geographic Area of Consideration	Elements to Consider	BLM Authorized and Other Known County Projects/Actions/Activities
Biological Resources – Vegetation	NECO Planning Area	Loss and fragmentation of vegetation and habitat resources, impacts to special status species, contribution to groundwater depletion, and contribution to the spread of nonnative and invasive weeds, channel diversions of desert washes,	All projects within the NECO planning area listed in Table 4.1-1 and 4.1-2 Projects closest to the DHSP site are primarily renewable energy and infrastructure projects, and include • Desert Sunlight Solar Farm Project • SCE Red Bluff Substation • Eagle Mountain Wind Project • Devers-Palo Verde No. 2 Transmission Line Project • Desert Southwest Transmission Line • Desert Center 50 Solar Project • Silverado Project • Palen Solar Energy Project.

Regional Overview. Over the past two hundred years, California's deserts have been subject to major human-induced changes that have threatened native plant and animal communities by habitat loss, fragmentation, and degradation. Some of the most conspicuous threats are those land uses and activities that have resulted in large-scale habitat loss due to urbanization, agricultural uses, landfills, military facilities, mining, grazing, off-highway vehicles and other recreational

uses, as well as linear features that fragment and degrade habitats such as roads, aqueducts, and railroads, and (Brooks and Lair 2005, Lovich and Bainbridge 1999, Jennings 1997). In addition, these development pressures have facilitated the introduction of non-native plant species and increases in predators such as ravens, which contribute to population declines and range contractions for many special-status plant and animal species (Boarman 2002, Lovich and Bainbridge 1999).

The deserts of eastern Riverside County comprise 40 percent of the County's land area but less than one percent of its human population. Outside of the small urban-agricultural center of Blythe, near the Colorado River and Arizona border, there are only a few scattered, small residential and agricultural areas between Indio (to the west) and Blythe, and most of the lands are administered by BLM.

In the areas identified for renewable energy development in eastern Riverside County, some of the many sensitive vegetation resources at risk include desert washes and desert dry wash woodland; native, slow-growing vegetation; and special-status plants. Combined with the effects of historical grazing and military training, and fragmentation of habitat from highway and aqueduct construction, the proposed wind and solar energy projects have the potential to further reduce and degrade native plant populations.

Existing Cumulative Conditions. The NECO planning area is located mostly within the Colorado Desert region of the Sonoran Desert, which is composed of a diverse range of vegetation communities typical of those found in the Sonoran Desert. These habitat types include desert scrub as well as sensitive desert wash and sand dune habitats. The geographic scope of the area of cumulative effects also includes several dry lake beds, numerous drainages, and areas relatively devoid of native vegetation, including developed areas, paved roads, highways, access roads, active and abandoned agricultural fields, active and abandoned rail lines, the Colorado River Aqueduct, and other disturbed areas. Invasive weed species have been identified throughout the cumulative impacts area. The area supports habitat for, and populations of, several special-status plant species, as described in Section 3.3.

Methodology

The following steps were used to develop the cumulative effects analysis for biological resources (both vegetation and wildlife):

1. Biological resources to be considered in the analysis were identified based on a review of the direct and indirect impacts of the proposed project and alternatives that might contribute to a cumulative impact (see above and Section 4.4: Biological Resources – Wildlife);
2. The geographic scope and timeframe within which the biological resource-related impacts of past, present, and reasonably foreseeable future actions could combine with impacts of the proposed project and alternatives for each resource was determined;
3. The current status and condition, and historical context for each resource was described;
4. Other projects in the cumulative scenario were identified that could affect each resource;
5. Cumulative effects to biological resources were analyzed;
6. Results were reported; and

7. The need for mitigation was assessed.

For each cumulative effect, the following factors were considered in making conclusions about the severity of an effect:

1. The status or condition of the resource as a result of past, present, and reasonably foreseeable impacts;
2. The contribution of the project to the overall cumulative impact to the resource;
3. The project's mitigated effect, when added to the effects of these planned future projects; and
4. Impact avoidance and minimization: any project design changes that were made or additional opportunities that could be taken to avoid or minimize potential impacts in light of cumulative impact concerns.

Analytical Tools and Study Limitations

This cumulative effects analysis employed a combination of quantitative and qualitative analyses: a Geographic Information System (GIS)-based quantitative analysis for assessing the direct cumulative effects to habitat loss, and a qualitative analysis of the cumulatively considerable indirect effects, based on consultations with agency biologists and regional experts, as well as a literature review of the threats to species and their habitats.

The GIS-based analysis of direct habitat loss was used for this cumulative effects analysis to:

1. Identify the overlap between existing and future projects and various biological data layers (e.g., landforms, soils, species occurrences, hydrographic data, vegetation mapping, wildlife habitat models, ownership and management layers); and
2. Create tables to summarize the direct impacts to these resources from existing and anticipated future projects, and the project's contribution to those effects.

Information on the data sets used, the sources of the data, and any limitations of the data are provided in each biological resource section.

The large renewable projects proposed on BLM-administered and private land used in the cumulative analysis for Biological Resources (Table 4.1-2, *Cumulative Projects Within the Geographic Scope of Cumulative Analysis for Each Resource Area)* represent the projects that had applications to the BLM or the California Energy Commission as of October, 2011. As stated in the Cumulative Scenario (Section 4.1.4), not all of the projects shown in the table will complete the environmental review, and not all projects will be funded and constructed. At the same time, new applications may be submitted in the near future that will affect biological resources. It is likely that new projects will be proposed in the near future that are not reflected in this analysis.

GIS is a widely used and effective tool for analyzing large amounts of spatial data, for documenting and quantifying assumptions about direct habitat loss, and the value of the habitat (where habitat models are available). However, the indirect impacts of projects are not easily captured in GIS and thus were only addressed qualitatively. The following indirect effects were considered in assessing the significance of cumulative impacts to all biological resources: habitat fragmentation and its effects on population viability; increased vehicle-related mortality; disturbance from noise, lighting, and increased human activity; increase in predators such as ravens;

spread of invasive non-native plants; downwind effects of facilities and wind fencing on sand transport corridors; bird collisions and electrocutions; climate change and its accompanying increased risk of drought, fire and exotics; indirect impacts to wildlife movement and connectivity; the downstream effects of channel diversions on fluvial sediment transport and riparian vegetation; and the long-term effects of groundwater pumping on groundwater-dependent vegetation. This qualitative analysis relied in part on the professional opinions of agency biologists and regional experts, and a review of literature and databases. Indirect effects listed above that are specific to wildlife resources are detailed in Section 4.4 (Biological Resources – Wildlife).

Finally, the GIS-based analysis requires the use of datasets that encompass the entire geographic scope of the analysis; the project-specific survey data could not be compared against data for the region that was derived from different methodologies and at different scales. Consequently, the GIS analysis of impacts to plant communities, landforms, and habitats is based on region-wide datasets for those resources (primarily NECO datasets), and not on project survey data. Acreages listed in the analysis below, for example, Desert Dry Wash Woodland or Sonoran Desert Scrub, will not match the project-specific survey results. Notwithstanding the challenges presented by comparing region-wide and project-specific datasets, the GIS-based datasets for vegetation and landforms provide a powerful tool for conducting region-wide analyses.

Past, Present, and Reasonably Foreseeable Future Projects

With the exception of the adjacent Desert Sunlight Solar Farm Project to the north (under construction), development is limited in the general area around the proposed project and alternatives. Tables 4.1-1 and 4.1-2 in Section 4.1.4 identify 51 existing and proposed projects along the I-10 corridor in the Chuckwalla Valley and the BLM Palm Springs Field Office region, within 50 miles of the proposed project and alternatives. Existing development near the project site includes the Colorado River Aqueduct, the Eagle Mountain Pumping Plant, the Kaiser Mine (now inactive), agricultural lands (including active and disused lands), and the communities of Desert Center and Lake Tamarisk. The foreseeable projects closest to the DHSP are primarily renewable energy and infrastructure projects, and include the Desert Sunlight Solar Farm Project (adjacent to the northern boundary of the project site), which is under construction; the approved SCE Red Bluff Substation; the proposed Eagle Mountain Wind Project; the Devers-Palo Verde No. 2 Transmission Line Project, under construction; the approved Desert Southwest Transmission Line; the proposed Desert Center 50 Solar Project; the proposed Silverado Project; and the approved Palen Solar Energy Project. The I-10 freeway runs in an east-west direction approximately 5 miles south of the solar facility site. Other existing land uses in the Chuckwalla Valley and surrounding area include various transmission lines, active and fallow agricultural fields, and recreational lands (including JTNP).

Land use in the cumulative analysis area has been historically altered by human activities, resulting in conversion of undeveloped land and habitat loss, fragmentation, and degradation. Reasonably foreseeable future projects that could impact biological resources in the cumulative impacts area characterize overall development trends in the Chuckwalla Valley as well as in the larger NECO planning area. Ongoing development in the area is dominated by renewable energy development. In addition to large-scale land conversion to industrial uses at a project site, major renewable projects require extensive access roads and new transmission lines to tie into the existing electrical grid system.

In addition to one-time construction impacts, the project would have ongoing operational impacts on biological resources. Therefore, all projects that might contribute impacts over time in the cumulative effects analysis area are considered for this analysis. These projects include non-renewable energy, transmission lines, wind power, and solar power projects as well as commercial and residential developments, reconstruction projects, a pumped storage project, an auto racetrack, a landfill, and a communication project. Section 4.1.4 describes all projects considered in this cumulative analysis.

The Office of Energy Efficiency and Renewable Energy (EERE), Department of Energy (DOE), and the BLM published a Programmatic Environmental Impact Statement (PEIS) in July 2012 to evaluate utility-scale solar energy development, to develop and implement Agency-specific programs or guidance that would establish environmental policies and mitigation strategies for solar energy projects, and to amend relevant BLM land use plans with the consideration of establishing a new BLM Solar Energy Program (DOE and BLM 2012). In the Final PEIS, the BLM has identified 17 proposed Solar Energy Zones (SEZs) in 6 states, including 2 in California. An SEZ is defined as an area with few impediments to utility-scale production of solar energy where BLM would prioritize solar energy and associated transmission infrastructure development. Approximately 285,000 acres have been identified as proposed SEZs in the Final PEIS. The DHSP lies mostly within the proposed Riverside East SEZ, which encompasses 147,910 acres between JTNP and the California-Arizona border (DOE and BLM 2012).

The DOE and BLM estimate that a total of 185,049 acres of land will be developed in California for solar power by 2030. This includes 138,789 acres on BLM lands and 46,260 acres on non-BLM lands (DOE and BLM 2012).

Cumulative Effects Analysis

There would be no cumulative vegetation impacts under the No Action or No Project Alternatives (Alternatives 1, 3, or A) because there would be no ROW grant for development of the solar farm area and associated facilities, including the gen-tie line. Alternative 2: No Project Alternative (with Plan Amendment to Find the Site Suitable for Solar Energy Development) could contribute to cumulative vegetation impacts because the CDCA Plan could be amended to allow solar development of the site. However, any future proposals for use of the site would be subject to separate environmental analysis and since such future proposals are unknown at this date, any impacts are also unknown. The remainder of this section addresses the Action Alternatives: Alternatives 4 through 7 and gen-tie alignment Alternatives C, D, and E.

Alternative B would not contribute to cumulative vegetation effects, as the cumulative scenario assumes concurrent construction of the Desert Sunlight approved gen-tie and Alternative B conductor stringing using the same crew at the same time, with no additional work required for Alternative B beyond what is required for the Desert Sunlight gen-tie.

Native Vegetation Including Sensitive Natural Communities

The geographic scope of the analysis of cumulative effects on plant communities and general wildlife habitat encompasses the NECO planning area. The analysis of direct impacts conducted in GIS uses the NECO plant communities dataset to map and quantify cumulative effects on native vegetation, including sensitive natural communities (Table 4.3-6). The NECO plant communities dataset is based on the 1996 California Gap Analysis Project, a project of the

Biogeography lab at UC Santa Barbara. The accuracy and resolution of the GAP mapping was improved for the NECO plant communities dataset (BLM and CDFG 2002, Appendix H) using aerial photos and extensive ground-truthing, but should not be viewed as a substitute for site-specific habitat mapping. Table 4.3-6 quantifies the cumulative effects to plant communities. It should be noted that the analysis presented here and quantified in Table 4.3-6 includes only those foreseeable future projects for which GIS-based spatial data was available at the time of the analysis (October 2011). Foreseeable future projects included in this analysis are primarily renewable energy projects that had submitted a Plan of Development (POD) to the BLM at the time of the analysis.

Threats to plant communities (i.e., vegetation and habitat) in the NECO planning area include habitat loss and fragmentation due to development, fire, off-highway vehicle activity, cattle and sheep grazing, overdrawn groundwater, and the spread of invasive plant species (BLM and CDFG 2002). Aeolian sand habitats in some areas are threatened by isolation from upwind sand sources, caused by land use changes and linear barriers (e.g., athel windrows). Current and foreseeable projects in the planning area, including renewable energy developments, contribute cumulatively to impacts to vegetation and habitat through loss and fragmentation of these resources, contribution to groundwater depletion, and contribution to the spread of nonnative and invasive weeds.

Table 4.3-6. Cumulative Impacts to Native Vegetation Communities

Vegetation Community[1]	Total Acres in NECO Planning Area[1]	Acres of Impacts from Existing Projects[2]	Acres of Impacts from Foreseeable Future Projects[3]	Contribution of DHSP Action Alternatives to Future Cumulative Impacts
Mojave – Creosote Bush Scrub	805,832	6,233	9,737	0 acres
Sonoran – Creosote Bush Scrub	3,829,999	22,815	149,736	Alt 4: 661 acres Alt 5: 624 acres Alt 6: 624 acres Alt 7: 624 acres Alt C: 47 acres Alt D: 36 acres Alt E: 53 acres
Desert Dry Wash Woodland	682,027	8,457	35,843	Alt 4: 547 acres Alt 5: 537 acres Alt 6: 420 acres Alt 7: 420 acres Alt C: 39 acres Alt D: 17 acres Alt E: 31 acres
Playa/Dry Lake	88,110	961	6,078	0 acres
Sand Dunes	62,140	1,465	128	0 acres
Chenopod Scrub	2,113	480	0	0 acres
Agriculture, Developed	94,187	93,066	1,506	Alt 4: 0 acres Alt 5: 0 acres Alt 6: 0 acres Alt 7: 0 acres Alt C: 0 acres Alt D: 26 acres Alt E: 0 acres
Pinyon-Juniper Woodland	1,928	0	0	0 acres

Table 4.3-6. Cumulative Impacts to Native Vegetation Communities

Vegetation Community[1]	Total Acres in NECO Planning Area[1]	Acres of Impacts from Existing Projects[2]	Acres of Impacts from Foreseeable Future Projects[3]	Contribution of DHSP Action Alternatives to Future Cumulative Impacts
Total	5,566,336	133,477	203,028	Alt 4: 1,208 acres Alt 5: 1,161 acres Alt 6: 1,044 acres Alt 7: 1,044 acres Alt C: 86 acres Alt D: 79 acres Alt E: 84 acres

1 - Based on the BLM NECO Plant Communities dataset conducted by the Biogeography Lab at the University of California, Santa Barbara and coordinated through the USGS Biological Resources Division UC Santa Barbara GAP Analysis (1996), updated during the NECO planning effort (see Appendix H of the NECO Plan/EIS [BLM and CDFG 2002]).
2 - Includes only those existing projects for which GIS-based spatial data was available at the time of the analysis.
3 - Includes only those foreseeable future projects for which GIS-based spatial data was available at the time of the analysis. Foreseeable future projects included in this analysis are primarily renewable energy projects that had submitted a Plan of Development (POD) to the BLM at the time of the analysis.
Source: BLM 2011a, 2011b.

Substantial adverse cumulative effects to plant communities from existing and proposed future projects (not including the proposed project) are seen in many vegetation types, particularly Sonoran Creosote Bush Scrub (4.5%), Desert Dry Wash Woodland (6.5%), and Playa/Dry Lake (8.0%). These figures reflect only direct impacts, and do not address the indirect effects to remaining habitat from fragmentation, alteration of the surface drainage patterns (which support many common and rare species), and an increase in the risk of fire and the introduction and spread of noxious weeds. Climate change is expected to exacerbate the effects of drought and noxious weed spread. The cumulative effects of groundwater pumping by all projects are expected to have adverse effects on groundwater-dependent vegetation in some portions of the Chuckwalla Valley.

The solar facility site is mapped as Sonoran Creosote Bush Scrub (661 acres) and Desert Dry Wash Woodland (547 acres) in the NECO plant communities dataset. A total of 3,829,999 acres of Sonoran Creosote Bush Scrub and 682,027 acres of Desert Dry Wash Woodland are mapped within the NECO planning area. Existing and foreseeable projects would impact 172,551 acres of Sonoran Creosote Bush Scrub and 44,300 acres of Desert Dry Wash Woodland. The proposed project or its alternatives would contribute at least incrementally to the cumulative loss of Sonoran Creosote Bush Scrub and Desert Dry Wash Woodland. Sonoran Creosote Bush Scrub is a common and widespread community in the southeastern deserts of California; however, this broad designation does not reflect the importance of large, intact blocks of habitat to wildlife movement, or to foraging and breeding habitat for wildlife, including state and federally listed threatened and endangered plant and animal species (see Section 4.4.16 for a detailed discussion of cumulative impacts to wildlife). The NECO mapping of plant communities also does not reflect the many uncommon and even rare plant assemblages within creosote scrub that have been documented and are monitored by the CNDDB (BLM 2011b). None of the alternatives analyzed above would interrupt aeolian sand transport in the local dune system or downwind to the Palen Dunes.

Implementation of Mitigation Measure VEG-6 requires acquisition and protection of Sonoran Creosote Bush Scrub and Desert Dry Wash Woodland. For compensation of desert tortoise habitat, it requires that the compensation lands will be located in the Colorado Desert Tortoise

Recovery Unit. Compensation would considerably reduce the contribution of the proposed project or its alternatives to the cumulative loss of these habitats. Although acquisition does not address the net loss of habitat in the immediate future (a temporal net loss of habitat), it is expected to prevent future losses of habitat by placing a permanent conservation easement and deed restrictions on private lands that could otherwise be converted for urban, agricultural, or energy development.

Mitigation Measure VEG-9 for weed management would offset the contribution of the proposed project or its alternatives to the indirect cumulative effects to the spread of invasive non-native plants and their effects on plants, wildlife, and fire risk. MM VEG-10 would require monitoring of groundwater-dependent vegetation (and remedial action in the event of adverse effects), and would considerably reduce the contribution of the proposed project or its alternatives to this effect.

Seemingly minor impacts can be adverse if they affect an extremely rare or limited resource, and the cumulative impact may be substantial. Desert Dry Wash Woodland is a sensitive natural community recognized under many laws, ordinances, regulations, standards, and area plans. Because it has a limited distribution (relative to common and widespread communities such as Sonoran Creosote Bush Scrub) and carries an ecological importance that is disproportionate to its limited extent, this would be a substantial cumulative effect, particularly in light of the contribution of the proposed project or its alternatives to cumulative effects to desert washes in the Palen watershed. The contribution of the proposed project or its alternatives to the cumulative loss of Desert Dry Wash Woodland would be reduced considerably by the implementation of MM VEG-6 (Provide Off-Site Compensation for Impacts to Vegetation and Habitat) and MM VEG-10 (Prepare and Implement a Desert Dry Wash Woodland Monitoring and Reporting Plan.). Again, although acquisition does not address the net loss of habitat in the immediate future (a temporal net loss of habitat), it is expected to prevent future losses of habitat by placing a permanent conservation easement and deed restrictions on private lands that could otherwise be converted for urban, agricultural, or energy development. Effects to sensitive Desert Dry Wash Woodland could be further minimized by adopting Alternative 6 (Reduced Footprint Solar Project) or Alternative 7 (High-Profile Reduced Footprint Solar Project), which would avoid 127 acres of this habitat in the southwestern parcel.

State-Jurisdictional Streambeds

As identified above, the geographic scope for the analysis of cumulative impacts to desert washes and streambeds (including intermittent and ephemeral washes) included the Palen watershed. Most of the desert washes that pass through the project site are distributary channels of the alluvial fan—or bajada—that drains the Iron and Coxcomb Mountains to the west, north, and northeast. Cumulative effects were analyzed within the context of the watershed because this relatively small watershed will be affected by several proposed solar projects in addition to the proposed project or its alternatives: the Desert Sunlight Solar Farm Project, the Silverado Project, the Palen Solar Power Project, and the Desert Center 50 Solar Project (see Figures 4.1-1 and 4.4-2 in Appendix A). Existing impacts to desert washes in the Palen watershed include urban and agricultural lands around Desert Center, segments of the I-10 and Highway 177 corridors, the closed Kaiser Mine, the Colorado River Aqueduct, and various transmission corridors (gas and electric).

Table 4.3-7 summarizes the direct loss of state-jurisdictional resources in the Palen watershed that would result from anticipated future projects. The metrics used are miles of desert washes (as delineated within the USGS National Hydrographic Dataset (2010) and CalWater Version 2.2.1 (California Interagency Watershed Mapping Committee 1999) as well as acres of Desert Dry Wash Woodland (based on the BLM NECO Plant Communities dataset conducted by the Biogeography Lab at the University of California, Santa Barbara and coordinated through the USGS Biological Resources Division UC Santa Barbara GAP Analysis (1996), updated during the NECO planning effort (see Appendix H of the NECO Plan/EIS [BLM and CDFG 2002]). The contribution of the proposed project and alternatives to cumulative effects from future projects is provided (1) as the sum of all drainages within the project site boundaries, and expressed as a percentage of all future projects effects, and (2) as the acreage of direct impacts to Desert Dry Wash Woodland.

Table 4.3-7. Cumulative Impacts to State Jurisdictional Resources within the Palen Watershed

Resource	Amount in Palen Watershed[1,2]	Impacts from Existing Projects[3]	Impacts from Foreseeable Future Projects[4]	Contribution of DHSP Action Alternatives to Future Cumulative Impacts
Desert Washes	1,496 miles	34 miles	56 miles	Alt 4: 9 miles Alt 5: 8.8 miles Alt 6: 7 miles Alt 7: 7 miles Alt C: 0.9 miles Alt D: 0.7 miles Alt E: 1.3 miles
Desert Dry Wash Woodland	148,856 acres	4,566 acres	2,944 acres	Alt 4: 547 acres Alt 5: 537 acres Alt 6: 420 acres Alt 7: 420 acres Alt C: 39 acres Alt D: 17 acres Alt E: 31 acres

1 - Based on the USGS National Hydrographic Dataset (2010).
2 - Based on the BLM NECO Plant Communities dataset conducted by the Biogeography Lab at the University of California, Santa Barbara and coordinated through the USGS Biological Resources Division UC Santa Barbara GAP Analysis (1996), updated during the NECO planning effort (see Appendix H of the NECO Plan/EIS [BLM and CDFG 2002])
3 - Includes only those existing projects for which GIS-based spatial data was available at the time of the analysis.
4 - Includes only those foreseeable future projects for which GIS-based spatial data was available at the time of the analysis. Foreseeable future projects included in this analysis are primarily renewable energy projects that had submitted a Plan of Development (POD) to the BLM at the time of the analysis.

The cumulative effects of channel diversions from all projects within the Palen watershed (56 miles of desert washes) are substantial and the incremental effects of the proposed project itself would be substantial (15 percent of total impacts from foreseeable future projects, or 9.9 miles of desert washes for Alternatives 4 plus B). The direct effects of all projects are compounded by the fact that they also cause impairment of hydrologic, geochemical, geomorphic, and habitat function and values of the remaining reaches downstream of the impact.

Indirect effects of all future projects that cannot be adequately addressed with this GIS analysis but are expected to be cumulatively considerable and include: impacts to water quality and sediment transport from the numerous channel diversions, culverts and road crossings, and fragmentation of the habitat and the corresponding loss of habitat function and values, including wildlife movement (discussed in detail in Section 4.4.16).

Implementation of the mitigation measures proposed above would reduce but not eliminate the contribution of the proposed project or its alternatives to cumulative effects, including MM VEG-6 (Provide Off-Site Compensation for Impacts to Vegetation and Habitat); MM VEG-10 (Prepare and Implement a Desert Dry Wash Woodland Monitoring and Reporting Plan); and MM VEG-8 (Implement Best Management Practices to minimize impacts to jurisdictional areas).

Special-Status Plants

A variety of special-status plant species have ranges that extend through the Mojave and Colorado Deserts of the NECO planning area, and several are endemic to the planning area. Five (5) special-status plants occur on the solar facility site and gen-tie alternative alignments: Emory's crucifixion thorn (CRPR 2.3), Harwood's woollystar (CRPR 1B.2), Utah vine milkweed (CRPR 4.2), ribbed cryptantha (CRPR 4.3), and desert unicorn-plant (CRPR 3.3Threats to special-status plants in the California deserts include habitat loss and fragmentation due to development, off-highway vehicle activity, cattle and sheep grazing, overdrawn groundwater, and the spread of invasive plant species (Western et al. 2010). Current and foreseeable renewable energy developments in the Colorado Desert contribute to impacts to special-status plants through loss and fragmentation of habitat to development, contributing to depletion of groundwater supplies, and contributing to the spread of nonnative and invasive weeds.

The proposed project or its alternatives are not anticipated to substantially impact any populations of special-status species or cacti, although a number of individuals would be impacted under Alternatives 4 5, 6, 7, B, C, D and E. However, the development of numerous large-scale projects, such other solar generation facilities, would result in a substantial permanent conversion of desert habitat to industrial/commercial uses, which would remove habitat for many special-status plant species and cacti. Therefore, the loss of this habitat is anticipated to result in substantial adverse cumulative impacts on populations of many special-status plant species and cacti and the incremental effect of the proposed project or its alternatives would be substantial.

Mitigation Measure VEG-7 (Mitigate direct impacts to special-status plants) would reduce the incremental contribution of the proposed project or its alternatives to cumulative impacts to Emory's crucifixion thorn, Harwood's woollystar and other CRPR 1 or 2 special-status plants by requiring the project owner to either (1) salvage individual plants from the site prior to construction; (2) introduce greenhouse-raised plants into suitable off-site habitat; or (3) to provide compensation lands with extant special-status plant occurrences. The project's effects on the three CRPR 4 species, while adverse, would not warrant further mitigation due to the higher regional abundance and the very low density of these species on site. Therefore, with implementation of these measures, the project's incremental direct and indirect contribution to cumulative effects to special-status plants would be reduced.

4.3.17 CEQA Considerations

This section is included in this EIS and CDCA Plan Amendment for future use by CEQA Lead and Responsible agencies and is not required under NEPA.

CEQA Significance Criteria

The significance criteria listed below are from the Environmental Checklist Form in Appendix G of the CEQA Guidelines. They are used to determine whether the proposed project or alterna-

tives would result in significant impacts under CEQA related to biological resources. The proposed project or alternatives would result in a significant impact related to biological resources if they would:

VEG-1 Have a substantial adverse effect, either directly or through habitat modifications, on any plant species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFG or USFWS;

VEG-2 Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFG or USFWS;

VEG-3 Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;

VEG-4 Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or

VEG-5 Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

CEQA Significance Determination

Alternative 1. Under Alternative 1, the proposed DHSP would not be approved by the BLM, and BLM would not amend the CDCA Plan. As a result, the proposed solar energy project would not be constructed and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended. It is expected that the site would remain in its existing condition, with no new structures or facilities constructed or operated and no ground disturbance. No significant impacts to vegetation resources would result from Alternative 1. Alternative 1 would not contribute to any significant cumulative impact, as defined in CEQA.

Alternative 2. Under Alternative 2, the proposed DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site available for future solar energy development. As a result, the proposed would not be constructed and BLM would manage the site consistent with the amended land use designation in the CDCA Land Use Plan. Any future project would be reviewed under a separate NEPA analysis. No significant impacts to vegetation resources would result from the DHSP. Alternative 2 would not contribute to any significant cumulative impact, as defined in CEQA.

Alternative 3. Under Alternative 3, the proposed DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site unavailable for future solar energy development. As a result, the proposed would not be constructed and BLM would manage the site consistent with the amended land use designation in the CDCA Land Use Plan. Any future project would be reviewed under a separate NEPA analysis. No significant impacts to vegetation resources would result from the DHSP. Alternative 3 would not contribute to any significant cumulative impact, as defined in CEQA.

Alternative 4. Under Alternative 4, the direct and indirect impacts of project construction, operation, and decommissioning, to vegetation resources, including native plant communities, special-status plant taxa, and state-jurisdictional streambeds, as described in Section 4.3.7, would be significant under criteria VEG-1 (impacts to special-status plants) and VEG-2 (impacts to sensitive natural communities), above.

With implementation of Mitigation Measures VEG-1 through MM VEG-10, these impacts to vegetation resources would be mitigated to less than significant levels under CEQA by minimizing vegetation impacts to the extent practicable; mitigating direct impacts to special-status plants; revegetating disturbed areas; controlling invasive weeds and preventing infestations by newly introduced weeds; and providing for long-term conservation and management of native vegetation on compensation lands. Under CEQA, there would be no unavoidable significant impacts to these resources. However, even less-than-significant adverse impacts can combine with impacts of other past, present, and reasonably foreseeable projects to result in a significant cumulative impact to vegetation resources. In this case, even with implementation of Mitigation Measures VEG-1 through MM VEG-10, Alternative 4 would have a considerable contribution to the cumulatively significant regional impacts to sensitive natural communities and state-jurisdictional streambeds, due to the residual and unavoidable impacts to these resources described in Sections 4.3.7 and 4.3.12.

There would be no significant impacts, at either the project level or cumulatively, under criteria VEG-3, VEG-4, and VEG-5 because Alternative 4 would be consistent with local plans and policies (i.e., the County of Riverside General Plan), and there are no federally protected wetlands or habitat conservation plans in the project area.

Alternative 5. Under Alternative 5, the direct and indirect impacts of project construction, operation, and decommissioning, to vegetation resources, including native plant communities, special-status plant taxa, and state-jurisdictional streambeds, as described in Section 4.3.8, would be significant under criteria VEG-1 (impacts to special-status plants) and VEG-2 (impacts to sensitive natural communities), above.

With implementation of Mitigation Measures VEG-1 through MM VEG-10, these impacts to vegetation resources would be mitigated to less than significant levels under CEQA by minimizing vegetation impacts to the extent practicable; mitigating direct impacts to special-status plants; revegetating disturbed areas; controlling invasive weeds and preventing infestations by newly introduced weeds; and providing for long-term conservation and management of native vegetation on compensation lands. Under CEQA, there would be no unavoidable significant impacts to these resources. However, even less-than-significant adverse impacts can combine with impacts of other past, present, and reasonably foreseeable projects to result in a significant cumulative impact to vegetation resources. In this case, even with implementation of Mitigation Measures VEG-1 through MM VEG-10, Alternative 5 would have a considerable contribution to the cumulatively significant regional impacts to sensitive natural communities and state-jurisdictional streambeds, due to the residual and unavoidable impacts to these resources described in Sections 4.3.7 and 4.3.12.

There would be no significant impacts, at either the project level or cumulatively, under criteria VEG-3, VEG-4, and VEG-5 because Alternative 5 would be consistent with local plans and policies (i.e., the County of Riverside General Plan), and there are no federally protected wetlands or habitat conservation plans in the project area.

Alternative 6. Under Alternative 6, the direct and indirect impacts of project construction, operation, and decommissioning, to vegetation resources, including native plant communities, special-status plant taxa, and state-jurisdictional streambeds, as described in Section 4.3.8, would be significant under VEG-2 (impacts to sensitive natural communities), above.

With implementation of Mitigation Measures VEG-1 through MM VEG-10, excluding MM VEG-7, these impacts to vegetation resources would be mitigated to less than significant levels under CEQA by minimizing vegetation impacts to the extent practicable; revegetating disturbed areas; controlling invasive weeds and preventing infestations by newly introduced weeds; and providing for long-term conservation and management of native vegetation on compensation lands. Under CEQA, there would be no unavoidable significant impacts to these resources. However, even less-than-significant adverse impacts can combine with impacts of other past, present, and reasonably foreseeable projects to result in a significant cumulative impact to vegetation resources. In this case, even with implementation of Mitigation Measures VEG-1 through MM VEG-10, Alternative 6 would have a considerable contribution to the cumulatively significant regional impacts to sensitive natural communities and state-jurisdictional streambeds, due to the residual and unavoidable impacts to these resources described in Sections 4.3.7 and 4.3.12.

There would be no significant impacts, at either the project level or cumulatively, under criteria VEG-3, VEG-4, and VEG-5 because Alternative 6 would be consistent with local plans and policies (i.e., the County of Riverside General Plan), and there are no federally protected wetlands or habitat conservation plans in the project area.

Alternative 7. Under Alternative 7, the direct and indirect impacts of project construction, operation, and decommissioning, to vegetation resources, including native plant communities, special-status plant taxa, and state-jurisdictional streambeds, as described in Section 4.3.8, would be significant under VEG-2 (impacts to sensitive natural communities), above.

With implementation of Mitigation Measures VEG-1 through MM VEG-10, excluding MM VEG-7, these impacts to vegetation resources would be mitigated to less than significant levels under CEQA by minimizing vegetation impacts to the extent practicable; revegetating disturbed areas; controlling invasive weeds and preventing infestations by newly introduced weeds; and providing for long-term conservation and management of native vegetation on compensation lands. Under CEQA, there would be no unavoidable significant impacts to these resources. However, even less-than-significant adverse impacts can combine with impacts of other past, present, and reasonably foreseeable projects to result in a significant cumulative impact to vegetation resources. In this case, even with implementation of Mitigation Measures VEG-1 through MM VEG-10, Alternative 7 would have a considerable contribution to the cumulatively significant regional impacts to sensitive natural communities and state-jurisdictional streambeds, due to the residual and unavoidable impacts to these resources described in Sections 4.3.7 and 4.3.12.

There would be no significant impacts, at either the project level or cumulatively, under criteria VEG-3, VEG-4, and VEG-5 because Alternative 7 would be consistent with local plans and policies (i.e., the County of Riverside General Plan), and there are no federally protected wetlands or habitat conservation plans in the project area.

Alternative A. Under Alternative A, no gen-tie line would be approved by the BLM, and BLM would not amend the CDCA Plan. As a result, the proposed gen-tie line would not be constructed and BLM would continue to manage the ROW consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended (including the Desert Sunlight amendment). It is expected that the Desert Sunlight gen-tie line would be built within the ROW, and that impacts to vegetation resources would be as described in the Desert Sunlight EIS (BLM 2011). No significant impacts to vegetation resources would result from Alternative A. Alternative A would not contribute to any significant cumulative impact.

Alternative B. Under Alternative B, the direct and indirect impacts of gen-tie line construction, operation, and decommissioning, to vegetation resources, including native plant communities, special-status plant taxa, and state-jurisdictional streambeds, as described in Section 4.3.12, would be significant under VEG-2 (impacts to sensitive natural communities), above.

With implementation of Mitigation Measures VEG-1 through MM VEG-9, excluding MM VEG-7, these impacts to vegetation resources would be mitigated to less than significant levels under CEQA by minimizing vegetation impacts to the extent practicable; revegetating disturbed areas; controlling invasive weeds and preventing infestations by newly introduced weeds; and providing for long-term conservation and management of native vegetation on compensation lands. Under CEQA, there would be no unavoidable significant impacts to these resources. Alternative B would not contribute to cumulative vegetation effects, as the cumulative scenario assumes concurrent construction of the Desert Sunlight approved gen-tie and Alternative B conductor stringing using the same crew at the same time, with no additional work required for Alternative B beyond what is required for the Desert Sunlight gen-tie.

There would be no significant impacts, at either the project level or cumulatively, under criteria VEG-3, VEG-4, and VEG-5 because Alternative B would be consistent with local plans and policies (i.e., the County of Riverside General Plan), and there are no federally protected wetlands or habitat conservation plans in the project area.

Alternative C. Under Alternative C, the direct and indirect impacts of gen-tie line construction, operation, and decommissioning, to vegetation resources, including native plant communities, special-status plant taxa, and state-jurisdictional streambeds, as described in Section 4.3.13, would be significant under VEG-2 (impacts to sensitive natural communities), above.

With implementation of Mitigation Measures VEG-1 through MM VEG-9, excluding MM VEG-7, these impacts to vegetation resources would be mitigated to less than significant levels under CEQA by minimizing vegetation impacts to the extent practicable; revegetating disturbed areas; controlling invasive weeds and preventing infestations by newly introduced weeds; and providing for long-term conservation and management of native vegetation on compensation lands. Under CEQA, there would be no unavoidable significant impacts to these resources. However, even less-than-significant adverse impacts can combine with impacts of other past, present, and reasonably foreseeable projects to result in a significant cumulative impact to vegetation resources. In this case, mitigation requirements would compensate for or minimize impacts to such a degree that Alternative C would not represent a considerable contribution to cumulative impacts on vegetation resources.

There would be no significant impacts, at either the project level or cumulatively, under criteria VEG-3, VEG-4, and VEG-5 because Alternative C would be consistent with local plans and pol-

icies (i.e., the County of Riverside General Plan), and there are no federally protected wetlands or habitat conservation plans in the project area.

Alternative D. Under Alternative D, the direct and indirect impacts of gen-tie line construction, operation, and decommissioning, to vegetation resources, including native plant communities, special-status plant taxa, and state-jurisdictional streambeds, as described in Section 4.3.14, would be significant under criteria VEG-1 (impacts to special-status plants) and VEG-2 (impacts to sensitive natural communities), above.

With implementation of Mitigation Measures VEG-1 through MM VEG-9, these impacts to vegetation resources would be mitigated to less than significant levels under CEQA by minimizing vegetation impacts to the extent practicable; revegetating disturbed areas; controlling invasive weeds and preventing infestations by newly introduced weeds; and providing for long-term conservation and management of native vegetation on compensation lands. Under CEQA, there would be no unavoidable significant impacts to these resources. However, even less-than-significant adverse impacts can combine with impacts of other past, present, and reasonably foreseeable projects to result in a significant cumulative impact to vegetation resources. In this case, mitigation requirements would compensate for or minimize impacts to such a degree that Alternative D would not represent a considerable contribution to cumulative impacts on vegetation resources.

There would be no significant impacts, at either the project level or cumulatively, under criteria VEG-3, VEG-4, and VEG-5 because Alternative D would be consistent with local plans and policies (i.e., the County of Riverside General Plan), and there are no federally protected wetlands or habitat conservation plans in the project area.

Alternative E. Under Alternative E, the direct and indirect impacts of gen-tie line construction, operation, and decommissioning, to vegetation resources, including native plant communities, special-status plant taxa, and state-jurisdictional streambeds, as described in Section 4.3.15, would be significant under criteria VEG-1 (impacts to special-status plants) and VEG-2 (impacts to sensitive natural communities), above. Although portions of the Alternative E alignment would be within a sand transport corridor, the gen-tie towers and access road would not significantly affect aeolian sand transport.

With implementation of Mitigation Measures VEG-1 through MM VEG-9, these impacts to vegetation resources would be mitigated to less than significant levels under CEQA by minimizing vegetation impacts to the extent practicable; revegetating disturbed areas; controlling invasive weeds and preventing infestations by newly introduced weeds; and providing for long-term conservation and management of native vegetation on compensation lands. Under CEQA, there would be no unavoidable significant impacts to these resources. However, even less-than-significant adverse impacts can combine with impacts of other past, present, and reasonably foreseeable projects to result in a significant cumulative impact to vegetation resources. In this case, mitigation requirements would compensate for or minimize impacts to such a degree that Alternative E would not represent a considerable contribution to cumulative impacts on vegetation resources.

There would be no significant impacts, at either the project level or cumulatively, under criteria VEG-3, VEG-4, and VEG-5 because Alternative E would be consistent with local plans and policies (i.e., the County of Riverside General Plan), and there are no federally protected wetlands or habitat conservation plans in the project area.

4.4 BIOLOGICAL RESOURCES – WILDLIFE

4.4.1 Methodology for Analysis

This analysis is based on information from the focused wildlife surveys, habitat assessments, reconnaissance surveys, and avian point-count studies conducted for the Desert Harvest Solar Project (DHSP), as well as information found in the CNDDB and lists of special-status species for the region (see Chapter 3.4). As discussed in Chapter 3.4, the Biological Resources Technical Report (BRTR), and the BRTR Supplement for Gen-Tie Alternative E (located in Appendices C.6 and C.16 respectively), focused wildlife surveys were conducted concurrently for desert tortoise (*Gopherus agassizii*) and burrowing owl (*Athene cunicularia*), a habitat assessment was conducted for the Mojave fringe-toed lizard (*Uma scoparia*), winter and spring avian point counts were conducted according the Bureau of Land Management (BLM) protocol for solar energy developments, a focused survey for Gila woodpecker (*Melanerpes uropygialis*) was conducted on the proposed solar facility site, and winter surveys for golden eagle (*Aquila chrysaetos*) were conducted throughout a 10-mile radius surrounding the project site. A discussion of the vegetation resources currently present in the project area is provided in Chapter 3.3, and impacts to vegetation resources are addressed in Chapter 4.3.

Impact analyses typically characterize effects to habitat as temporary or permanent. Due to the slow habitat recovery rates in desert ecosystems, impacts that might be considered temporary in other parts of California will be considered long-term or permanent in this analysis (see Section 4.3.1).

Direct and indirect impacts of each action alternative to wildlife are discussed in Sections 4.4.4 through 4.4.15. The analysis of direct and indirect impacts covers construction, operations and maintenance (O&M), and decommissioning of the proposed project. Direct effects include the direct or immediate effects of the project on a species or its habitat. Examples of direct impacts to wildlife include injury or death to an individual; habitat loss or degradation; interference with movement or migration; and disturbance from noise, light, or dust. Indirect effects include those effects that are caused by or will result from the proposed project and are later in time or farther removed in distance, but are still reasonably certain to occur. Examples of indirect effects to wildlife include increased predation due to certain habitat alterations, and the introduction of invasive plant or animal species that compete with native species and cause habitat degradation.

4.4.2 Summary of Impacts

The impacts of the proposed project and alternatives to vegetation resources are summarized in Section 4.3.2, and described in further detail in Sections 4.3.4 through 4.3.15. Impacts to natural vegetation types are summarized in Tables 4.3-1 and 4.3-2. In the following analysis of impacts to wildlife, these acreages of natural vegetation provide the basis for evaluating impacts to wildlife habitat because the vegetation resources assessed in Chapter 4.3 also provide habitat for the special-status wildlife addressed herein. Alternatives 4 and B, the Applicant's proposed solar project and gen-tie line (proposed project), would remove 1,067 acres of Creosote Bush Scrub (defined as Sonoran Desert Scrub in the NECO Plan) and 231 acres of Blue Palo Verde–Ironwood Woodland (defined as Desert Dry Wash Woodland in the NECO Plan). All project alternatives are described in Section 2. See Tables 4.3-1 and 4.3-2 for a summary of impacts to vegetation and habitat for each alternative.

Portions of the proposed project and alternatives would occur within areas designated as special management areas for wildlife. These include the Chuckwalla Desert Wildlife Management Area (DWMA; see Sections 3.4.1 and 3.4.2); the Palen-Ford Wildlife Habitat Management Area (WHMA; see Sections 3.4.1 and 3.4.2); and the Chuckwalla Critical Habitat Unit for desert tortoise (CHU; see Section 3.4.5). Tables 4.4-1 and 4.4-2 summarize the acreages of each alternative's impacts to wildlife management areas.

Table 4.4-1. Summary of Impacts to WHMAs – Solar Generation Site Alternatives

	Impacts (acres)			
Management Area	**Alternative 4: Proposed Solar Project**	**Alternative 5: Solar Project Excluding WHMA**	**Alternative 6: Reduced Footprint Solar Project**	**Alternative 7: High-Profile Reduced Footprint Solar Project**
Chuckwalla DWMA only	—	—	—	—
Chuckwalla CHU only	—	—	—	—
DWMA and CHU overlap area	—	—	—	—
Palen-Ford WHMA	46	—	46	46
Total Acres in Wildlife Management Areas	46	—	46	46

Table 4.4-2. Summary of Impacts to WHMAs – Gen-Tie Line Alternatives[1]

	Impacts (acres)			
Management Area	**Alternative B: Proposed Gen-Tie – Shared Towers**	**Alternative C: Separate Transmission Towers Within Same ROW**	**Alternative D: Cross-Valley Alignment**	**Alternative E: New Cross-Valley Alignment**
Chuckwalla DWMA only	—	—	—	2.5
Chuckwalla CHU only	34.2	34.2	12.4	—
DWMA and CHU overlap area	1.5	1.5	1.7	1.8
Palen-Ford WHMA	—	—	6.2	51.8
Total Acres in Wildlife Management Areas[2]	**35.7**	**35.7**	**20.3**	**56.1**

1 - Estimated acreage based on proportion of alignment within each management area, and the estimated disturbance acreage provided by the Applicant for each alternative

2 - The total acreage within wildlife management areas is not the sum of the DWMA, CHU, and WHMA areas due to partial overlap of the DWMA and CHU (see Figure 3.4-1, Wildlife Management Areas, in Appendix A), but rather is the total acres that fall within one or more designated WHMAs.

4.4.3 Applicant-Proposed Measures

The Applicant has provided several measures as part of the project design that would be implemented during construction, operation, and/or decommissioning to reduce potential impacts to wildlife. In some cases, mitigation measures further clarify or expand on AM reporting requirements, timing of implementation, or other details where appropriate. Where there is a conflict between provisions of the mitigation measures imposed and the following AM, the mitigation measures take precedence.

Applicant-proposed measures to reduce impacts to wildlife resources include the following:

AM-BIO-1 **Habitat Compensation Plan.** (Text provided in Section 4.3, Biological Resources – Vegetation).

AM-BIO-2 **Integrated Weed Management Plan (IWMP).** (Text provided in Section 4.3, Biological Resources – Vegetation).

AM-BIO-4 **Worker Environmental Awareness Program (WEAP).** (Text provided in Section 4.3, Biological Resources – Vegetation).

AM-BIO-5 **Vegetation Resources Management Plan.** (Text provided in Section 4.3, Biological Resources – Vegetation).

AM-BIO-6 A **Desert Tortoise Translocation Plan** will be prepared for the project and will be implemented by the Applicant to ensure that construction monitoring will be conducted by BLM-, USFWS-, and CDFG-approved biologists during all construction activities, and that any desert tortoise found with the construction zone will be translocated to a suitable location outside of the project footprint. The Final Plan will conform to the 2010 USFWS desert tortoise relocation guidelines entitled *Translocation of Desert Tortoise (Mojave Population) From Project Sites: Plan Development Guidance* (unpublished report dated August 2010).

AM-BIO-7 The Applicant shall contribute to the USFWS Regional Raven Management Program by making a one-time payment of $105 per acre of project disturbance to the National Fish and Wildlife Federation Renewable Energy Action Team raven control account. An **Avian and Bat Protection Plan** will be prepared and will be implemented by the Applicant to specify necessary actions to be taken to protect nesting bird and bat species, including burrowing owls, nesting birds, and roosting bats. The Draft Plan will be reviewed and approved by BLM. The Final Plan will conform to the 2010 USFWS avian and bat guidelines entitled Considerations for Avian and Bat Protection Plans U.S. Fish and Wildlife Service White Paper.

AM-BIO-8 **Construction Water Storage Pond Design.** The temporary construction water ponds shall be designed, constructed, and operated in compliance with all applicable regulatory requirements with respect to design, operation, and maintenance, protection of migratory waterfowl, and raven management.

4.4.4 Alternative 1 – No Action (No Plan Amendment)

Under Alternative 1, the DHSP would not be approved by the BLM, and BLM would not amend the CDCA Plan. As a result, the proposed project and gen-tie line would not be constructed and the BLM would continue to manage the project site consistent with the existing land use designation in the CDCA Plan.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no ground disturbance. As a result, impacts from the DHSP would not occur and project sites would continue to be affected by current uses.

4.4.5 Alternative 2 – No Project Alternative (with Plan Amendment to Find the Site Suitable for Solar Energy Development)

Under Alternative 2, the proposed DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site available for future solar energy development. As a result, the DHSP would not be constructed on the project site and BLM would manage the site consistent with the amended land use designation in the CDCA Land Use Plan. No impacts from the DHSP would occur.

4.4.6 Alternative 3 – No Project Alternative (with Plan Amendment to Find the Site Unsuitable for Solar Energy Development)

Under Alternative 3, the proposed DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site unavailable for future solar energy development. As a result, the DHSP would not be constructed on the project site and BLM would manage the site consistent with the amended land use designation in the CDCA Land Use Plan. No impacts from the DHSP would occur.

4.4.7 Alternative 4 – Proposed Solar Project

Alternative 4 is the Applicant's proposed solar project, described in Chapter 2.4 and briefly summarized in Section 4.3. The project would be located on 1,208 acres, and would be comprised of two separate parcels separated by a desert wash. The northern parcel would be 1,053 acres and the southern parcel would be 155 acres (see Figure 2-2 in Appendix A).

Construction

Project construction, including construction methods, equipment, scheduling, and phasing, are described in Chapter 2.4.4. Most construction impacts to wildlife and wildlife habitat would occur during Phase 2 (September 2013 to November 2014), which would include site fencing, installation of temporary power, site grading and preparation over an 1,043-acre area, and other facilities. Construction would generally occur 2 hours before sunrise and 2 hours after sunset, Monday through Friday, but construction during additional hours may be necessary at times.

Direct Effects

Construction activities associated with Alternative 4 would directly affect wildlife in a number of ways, including the long-term and permanent loss of habitat, disturbance from noise and human activity, injury or mortality of animals, and interference with wildlife movement. Long-term and permanent impacts to vegetation and habitat are defined in Section 4.3.1. Although the project site would ultimately be decommissioned (Chapter 2), the proposed project does not identify a land use following closure of the solar facility. While decommissioning may include efforts to restore pre-project habitat values, it is unknown at this time whether (1) restoration will be recommended, and (2) whether it would be feasible, considering the proposed long-term land use. Therefore, impacts to vegetation and habitat that will last for the life of the project are presumed to be "permanent" in this analysis. These effects are discussed in detail below, and mitigation measures to reduce the severity of these effects are presented at the end of this section. See also the Applicant's Draft Closure and Reclamation Plan in Appendix C.18 of this Final EIS.

Wildlife Habitat. The term *habitat* refers to the environment and ecological conditions where a species is found. Wildlife habitat is generally described in terms of vegetation, though a more

thorough explanation often must encompass further detail, such as availability or proximity to water; suitable nesting or denning sites; shade; foraging perches; cover sites to escape from predators; soils that are suitable for burrowing or hiding; limited noise and disturbance; and many other factors that are unique to each species. Vegetation reflects many aspects of habitat, including regional climate, physical structure, and biological productivity and food resources (for many wildlife species). Thus, vegetation is a useful overarching descriptor for habitat and it is the primary factor in this analysis of impacts to wildlife habitat. Where additional details of habitat suitability are necessary to this analysis, they are provided in the discussion of special-status wildlife species in Section 3.4. Examples include the aeolian sand requirements for Mojave fringe-toed lizard, and the availability of shade, cover, and water for burro deer. Project construction would result in permanent and long-term impacts to 1,206 acres of natural vegetation (i.e., all native vegetation on the site), including 1,026 acres of Creosote Bush Scrub (Sonoran Desert Scrub) and 180 acres of Blue Palo Verde–Ironwood Woodland (Desert Dry Wash Woodland). Following construction, any remaining or recovering vegetation and habitat would be unsuitable for most species, particularly species with specific habitat requirements, including most special-status wildlife species. Vegetation and habitat conditions following construction may remain suitable for some common species, such as side-blotched lizard, house finch, northern mockingbird, and desert cottontail. The project's direct adverse impacts to wildlife habitat would be substantial but can be reduced or offset through implementation of Mitigation Measures VEG-1 through MM VEG-6, which describe requirements for monitoring, reporting, managing, and compensating for biological resources impacts. These impacts and mitigation measures are described in full in Section 4.3.7. In combination, these measures would ensure that project impacts to biological resources are minimized and do not exceed the impacts described herein; that all such impacts are documented and reported to resource agencies; that communication among the project owner and resource agencies is maintained during construction, O&M and decommissioning phases via the Designated Biologist; that workers on the site are informed of the requirements for protection of biological resources; that adverse impacts to soils, vegetation, and habitat are mitigated to the extent feasible; and that loss of vegetation and habitat is compensated by permanent protection and management of comparable habitat off site. These measures are expected to effectively mitigate the majority of the project's adverse impacts to wildlife habitat, though some residual impacts would remain (below).

Wildlife Mortality. Construction would generally cause mortality of mammals and reptiles, which would be hindered or prevented from escaping the construction site by the project's perimeter fencing and desert tortoise exclusion fence, described further below. Mortality could also result from trampling or crushing during clearing, grading, or excavation of trenches for underground power collection lines and water storage ponds/retention basins. Potential mortality to native birds and nestlings is discussed below. This direct adverse impact to wildlife could be substantial but can be somewhat reduced through Mitigation Measure WIL-1 (Wildlife Impact Avoidance and Minimization). This measure would reduce wildlife mortality through a variety of strategies, including exclusion fencing to keep animals out of construction areas; closing or covering trenches, open pipes, or other potential traps to wildlife; speed limits and other measures to minimize road strikes; and the salvage or relocation of animals during initial clearing and grading, as practicable. Even with implementation of MM WIL-1, initial clearing and site preparation work could cause mortality among most small mammals and reptiles unable to escape.

Noise and Lighting Impacts to Wildlife. Maximum noise levels during construction are estimated to range from 74.8 to 83.2 dBA at 100 feet from construction activity, and would decrease with distance away from activity. This would be a substantial increase over existing background noise levels near the solar facility, which are expected to be low, with typical daytime noise levels of 35 to 50 dBA. See Section 4.12 (Environmental Consequences – Noise and Vibration) for estimated noise levels associated with various construction activities that would occur on the site. In addition, if construction activities were to occur at night, lighting would be required. Noise and lighting during construction would affect wildlife in adjacent habitats by disrupting foraging, breeding, sheltering, and other activities; or it may cause animals to avoid otherwise suitable habitat surrounding the site. The effects of construction noise include annoyance, which causes birds and other wildlife to abandon nests or dens; increased stress hormone levels, interference with sleep and other activities; and interference with acoustic communication by masking important sounds or sound components, such as territorial calls, contact calls, or alarm calls (Dooling and Popper 2007). Many species rely on vocalizations during the breeding season to attract a mate within their territory, and noise from construction could disturb nesting birds and other wildlife and adversely affect nesting and other activities.

In addition to noise, lighting during project construction may affect nocturnal wildlife species. Lighting can affect behavior and physiology, and may also increase the risk of predation of wildlife because they may be more detectable to nocturnal predators (USACE and CDFG 2009). Lighting would be likely to attract nocturnal insects and, in turn, bats; possibly including special-status bats, discussed further below. This direct adverse impact to wildlife on the site and in adjacent habitat may be substantial. Mitigation Measure WIL-1 (Wildlife Impact Avoidance and Minimization) and MM VIS-1 would minimize the impacts of noise and lighting to the extent feasible by ensuring that lighting is focused only on work areas and does not unnecessarily extend beyond work areas, and scheduling noisy construction activities near the project site perimeter outside the most sensitive seasons (i.e., the spring avian breeding season). These measures would minimize potential noise and lighting impacts to wildlife in the area, but would not eliminate them and these disturbances are expected to adversely affect wildlife behavior and habitat use in the area immediately surrounding the site.

Construction Phase Water Storage Ponds: During construction, storage ponds on the site would be used to store water for dust control. These ponds would be within the fenced construction area. Even though they would be fenced, they will be likely to attract birds, including ravens, and thus act as a "subsidy" (see discussion of impacts during the O&M phase, below). Storage ponds would be likely to attract nocturnal insects and, in turn, bats; possibly including special-status bats, discussed further below. The storage ponds may present drowning hazards to reptiles, small mammals, and desert kit fox in the vicinity of the construction area, depending on their slopes and surfaces. However, most terrestrial wildlife exposure to the ponds would be limited by the perimeter exclusion fencing, and any animals that could encounter the ponds would likely be those that remain within the fence line at the start of construction activities. This adverse impact to wildlife in the project area may be substantial. Mitigation Measure WIL-1 (Wildlife Impact Avoidance and Minimization) includes a requirement to periodically inspect wildlife pitfalls, including storage ponds, to avoid or minimize wildlife entrapment. Mitigation Measure WIL-7 (Desert Kit Fox and American Badger Impact Avoidance) requires pre-construction surveys and exclusion of any desert kit fox or badger from the solar facility prior to

beginning construction. These measures are expected to minimize adverse impacts of the storage ponds to wildlife, but would not fully eliminate these impacts.

Desert Tortoise. Desert tortoises have not been documented within the solar facility site, but are expected to be present based on nearby known occurrences and desert tortoise sign located on the site during field surveys (see BRTR, Appendices C.6 and C.16). The proposed solar facility site and surrounding area is modeled as relatively low value habitat for desert tortoise. The USGS Desert Tortoise Habitat Model (Nussear et al. 2009), using a scale of 0.0 to 1.0, assigns a value of 0 to 718.6 acres of the proposed project's solar field, a value of 0.1 to 484 acres of the proposed project's solar field, and a value of 0.2 to the remaining 4.6 acres of the solar field. However, despite these low values desert tortoise sign was detected on the project site and desert tortoise were detected on adjacent lands. None of the burrows or other sign observed on the site exhibited any evidence of recent use, but the existing habitat on site consists of relatively intact creosote bush scrub and wash communities, all of which is habitat known to support desert tortoise. Desert tortoises are found throughout the region and are mobile during their active seasons. Based on the presence of active desert tortoises on the adjacent Desert Sunlight Solar Farm Project (Desert Sunlight) site, it was determined that the entire solar facility site may be occupied by desert tortoises at any time, albeit only in low numbers. Implementation of Alternative 4 would result in the permanent and long-term loss of 1,208 acres of desert tortoise habitat, presumed to be occupied, and located within a geographic region that is occupied by desert tortoises. Project construction would also prevent desert tortoises from crossing the solar facility site to access habitat elsewhere in or around the Chuckwalla Valley.

Because of the large-scale land use conversion of the project site, and associated activities such as vehicle traffic and other actions, construction of the solar facility would require the Applicant to translocate any tortoises found within the 1,208-acre project site Prior to construction, the site would be fenced with desert tortoise exclusionary fencing to permanently exclude tortoises, to avoid risk of injury or mortality to tortoises during project O&M. For tortoises near but not within the site, fencing off habitat within their home ranges would likely result in displacement effects as described below (Indirect Effects).

No living desert tortoises were found within the project site. However, the actual number of desert tortoises on the project site as of the commencement of construction cannot be determined from field survey data alone, due to the possibility that tortoises may have been overlooked during surveys or may have moved onto the site since surveys were completed. The USFWS (2010a) provides a mathematical formula for estimating actual numbers of adult and sub-adult desert tortoises from field survey data. However, this formula is not applicable for the available field data because no living tortoises were observed. Based on the presence of active desert tortoises on the adjacent Desert Sunlight Solar Farm Project site and associated gen-tie alignments, it was determined that the entire solar facility site and all gen-tie alternative alignments may be occupied by desert tortoises at any time, albeit in low numbers. The remainder of this analysis is based on the estimate that more than five desert tortoises occur on the solar facility site, and would necessitate translocation prior to construction. However, it should be noted that this is a conservative approach, and it is likely that fewer tortoises would actually be translocated for the DHSP.

During construction of the proposed project or its alternatives, desert tortoises or eggs could be harmed during clearing, grading, and trenching activities, or tortoises could become entrapped

within open trenches and pipes. Construction activities could also cause direct mortality, injury, or harassment of tortoises or eggs as a result of encounters with vehicles or heavy equipment. Other direct effects could include individual tortoises or eggs being crushed or entombed in their burrows, disruption of tortoise behavior during construction or operation of facilities, disturbance by noise or vibrations from the heavy equipment, and injury or mortality from encounters with workers' or visitors' pets. Desert tortoises may also be attracted to the construction area by shade beneath vehicles, equipment, or materials, or the application of water to control dust, placing them at higher risk of injury or mortality. Increased human activity and vehicle travel could disturb, injure, or kill individual tortoises. Also, tortoises may take shelter under parked vehicles where they could be killed, injured, or harassed when the vehicle is moved.

The project's potential adverse impacts to any desert tortoises on the site and to long-term habitat availability could be substantial. These impacts can be avoided, reduced, or offset through implementation of mitigation measures in Sections 4.3.7 and additional measures summarized here and presented below in a section entitled "Mitigation Measures." Mitigation Measures VEG-1 through MM VEG-6 would require monitoring and reporting, worker environmental training, minimization of construction impacts, and off-site compensation for habitat impacts at a minimum 1:1 ratio. In addition, Mitigation Measure WIL-1 (Wildlife Impact Avoidance and Minimization) includes numerous requirements to prevent wildlife road strikes, entrapment in pitfalls, interactions with workers' pets, and other threats. MM WIL-2 (Desert Tortoise Clearance Surveys, Exclusion Fencing, and Translocation) requires that the project owner exclude desert tortoises from the project site, survey the entire site for tortoises prior to initial clearing and grading, and relocate any tortoises in accordance with a project-specific Desert Tortoise Translocation Plan to be prepared by the project owner and implemented only upon approval by the USFWS and CDFG.

Desert tortoise clearance surveys and translocation have inherent risks and could themselves result in direct adverse effects to desert tortoises, such as mortality, injury, or harassment of desert tortoises due to equipment operation, fence installation, removal of tortoise burrows, and tortoise translocation (described in more detail below). Mitigation of desert tortoise habitat loss is also described further below. The suite of measures to mitigate the project's adverse impacts to desert tortoises and their habitat is expected to fully mitigate these impacts as required under CESA. In addition to the mitigation measures required by this document, the project will be subject to review by the USFWS and CDFG under the ESA and CESA, respectively.

Critical Habitat. The project site is not within designated critical habitat for desert tortoise. Impacts of the various gen-tie line alignments to designated critical habitat are discussed in Sections 4.4.12 through 4.4.15.

Translocation. Any tortoises found during clearance surveys would be translocated out of the project area. However, it is possible that some tortoises, particularly juveniles or tortoise eggs, would be overlooked during clearance surveys because of the cryptic nature of tortoises. Similarly, egg clutches would be in burrows below ground and might also be missed during clearance surveys. As a result, these tortoises and eggs would be subject to mortality from project activities within the tortoise exclusion fence during construction and future operation of the project. Mortality would be minimized through other measures, including MM WIL-1 (Wildlife Impact Avoidance and Minimization).

Because handling and translocation cause risk to tortoise survival, all translocated tortoises must be radio-tagged and monitored to evaluate translocation success. If five or more tortoises are translocated, the USFWS (2010b) also requires radio-tagging and follow-up monitoring of an equal number of host population tortoises at each translocation site. In addition, USFWS requires radio-tagging and follow-up monitoring of an equal number of tortoises at a selected control site, where no translocated animals have been introduced. For the solar facility, the analysis here and in the Biological Assessment is based on the estimate that five or more desert tortoises occur on the solar facility site, and would necessitate translocation prior to construction. However, it should be noted that this is a conservative approach, and it is likely that fewer tortoises would actually be translocated for the DHSP. Any tortoises removed from the project site would be translocated more than 500 meters to suitable off-site habitat on BLM land.

Desert tortoise translocation would require a series of actions including, but not limited to, the following activities (USFWS 2010b):

- Identification of the proposed translocation site(s);
- determination of existing tortoise density and health assessment at the translocation site, and an assessment of the site's ability to accommodate additional tortoises above baseline conditions;
- health assessments and equipment or facilities for in situ or ex situ tortoises quarantine prior to their release into host populations; and
- GPS monitoring of translocated tortoises.

Translocation impacts to desert tortoises may include elevated stress hormones, changes in behavior and social interaction, increased movement (caused by courting or aversive behavior with other tortoises, avoidance of predators or anthropogenic influence, homing, or seeking out of preferred or familiar habitat), spread of disease, increased competition for resources, and increased predation. Furthermore, handling, holding, and transport protocols may compound with abiotic factors to affect the outcome for translocated individuals (Bertolero et al. 2007; Field et al. 2007; Rittenhouse et al. 2007; Germano and Bishop 2009), particularly during extreme temperatures, or if tortoises void their bladders (which function in water storage and physiology). Pathogens may be inadvertently spread among tortoises during handling. Tortoises moved outside their home ranges may attempt to return, leading to displacement effects (see Indirect Effects, below). Mortality estimates among translocated desert tortoises have ranged from 15% to 25% and possibly as high as 50% for the Fort Irwin translocation project, though the effects of translocation are difficult to separate from the effects of region-wide drought (Esque et al. 2010). The risks and uncertainties of translocation to desert tortoise are well recognized in the desert tortoise scientific community. The Desert Tortoise Recovery Office (DTRO) Science Advisory Committee (SAC) has made the following observation regarding desert tortoise translocations (DTRO 2009, p. 2):

> *. . . consensus (if not unanimity) exists among the SAC and other meeting participants that translocation is fraught with long-term uncertainties, notwithstanding recent research showing short-term successes, and should not be considered lightly as a management option. When considered, translocation should be part of a strategic population augmentation program, targeted toward depleted Populations in areas containing "good" habitat. The SAC recognizes that quantitative measures of habitat quality relative to desert tortoise demographics or population status currently do not exist, and a specific measure of*

"depleted" (e.g., ratio of dead to live tortoises in surveys of the potential translocation area) was not identified. Augmentations may also be useful to increase less depleted populations if the goal is to obtain a better demographic structure for long-term population persistence. Therefore, any translocations should be accompanied by specific monitoring or research to study the effectiveness or success of the translocation relative to changes in land use, management, or environmental condition.

In recognition of the concerns about desert tortoise translocation and the ongoing research needs to improve the effectiveness of translocation, Mitigation Measure WIL-2 requires that the Translocation Plan include an alternate strategy, in which desert tortoises would be removed from the wild at the project site and placed permanently into conservation facilities approved by USFWS and CDFG. Upon completion of a final Desert Tortoise Translocation Plan and issuance of the Biological Opinion from USFWS and Incidental Take Permit or Consistency Determination from CDFG, the project owner shall adopt measures to either translocate tortoises into the wild or to permanently place them in approved facilities. This measure is intended to inform and improve translocation efforts, and enhance the Final Desert Tortoise Translocation Plan's ability to minimize impacts associated with take of desert tortoises and overall impacts to the species.

Mitigation for Desert Tortoise Habitat Loss. Mitigation of desert tortoise habitat loss would be accomplished through implementation of Mitigation Measure VEG-6 (Provide Off-Site Compensation for Impacts to Vegetation and Habitat). This measure requires (1) permanent protection and management of the compensation lands for desert tortoise (compensation lands would be acquired at a minimum 1:1 ratio for occupied desert tortoise habitat), and (2) enhancement actions, as needed, such as habitat restoration, invasive plant control, road closures or road fencing, reducing or eliminating livestock and burro grazing, and controlling ravens and other predators. The decision to make specific improvements would be based on site-specific evaluation of the proposed compensation lands, and need for improvements or management actions. These enhancement actions would be made as site-specific initial improvements or included in the long-term management plan for each compensation parcel. MM VEG-6 requires that the compensation lands for impacts to desert tortoise shall be within the Colorado Desert Tortoise Recovery Unit. MM VEG-6 includes an estimate of total cost to acquire and manage compensation lands, based on current estimates of land values, evaluation and transaction costs, habitat improvements, and long-term management. According to MM VEG-6, the project owner would be required to provide the compensation lands, or to provide financial assurance sufficient to carry out the habitat acquisition and management, no later than 30 days prior to initiation of ground disturbance. The Applicant is currently working with Wildlands Inc. to develop a suitable compensation strategy addressing the resources and ratios described in MM VEG-6 (see Appendix C.12). Specific compensation land availability cannot be identified or quantified at this time. Wildlands Inc. provided a review of private land availability in the area during a meeting with resource agencies on March 2, 2012, indicating that acquisition of the requisite acreage of suitable compensation lands to mitigate desert tortoise habitat loss is feasible. Availability of most requisite acreage within the Interstate-10 corridor, as described in MM VEG-6 is feasible but acquisition at the full 1:1 ratio may be challenging.

Special-Status Reptiles and Amphibians. Based on habitat and geographic range, desert tortoise and rosy boa are the only special-status reptile or amphibian species with a moderate or greater probability of occurring on the project site (Section 3.4). The Mojave fringe-toed lizard,

a BLM Sensitive Species known from the area, is not expected to occur on the site due to absence of suitable aeolian sand habitat. No other BLM-designated Sensitive reptile or amphibian species are known from the project study area (see Section 3.4 and Appendices C.6 and C.13). Project impacts and mitigation for desert tortoises are described above. Habitat on the project site is only marginally suitable for rosy boa due to the relatively flat topography and lack of boulders or rock crevices where they typically take cover. However, the site is within their geographic range and could be occupied at low density. Project impacts to rosy boa could include mortality or injury to snakes, and the loss of marginally suitable habitat. These adverse impacts can be reduced or offset through implementation of Mitigation Measures VEG-1 through MM VEG-6 (described above and in full in Section 4.3.7) and MM WIL-1 (Wildlife Impact Avoidance and Minimization), below. These measures would require biological monitoring during construction activities, moving rosy boas out of harm's way, worker environmental awareness training, restoration of temporarily impacted areas, compensation for permanently impacted habitat at a minimum 1:1 ratio, minimization of impact areas, vehicle speed limits of 15 miles per hour, measures to avoid creating wildlife pitfalls, and control of fugitive dust.

Native Birds. Native birds are protected under the California Fish and Game Code and federal Migratory Bird Treaty Act (MBTA) (see Section 3.4.1). Most of these species have no other special conservation status as defined in Section 3.4.5. The project also could have more specific impacts to special-status birds, dependent on the behavior, seasonality, and habitat requirements of each species. These are discussed in more detail for each species or group of species, below.

The entire project site and surrounding area provides suitable nesting habitat for numerous resident and migratory bird species. Bird species diversity at the site is described in Section 4.3 and in the BRTR (Appendices C.6 and C.16). Many adult birds would flee from equipment during initial vegetation clearance for project construction. However, nestlings and eggs would be vulnerable to impacts during project construction, and are also protected by the MBTA and Fish and Game Code Sections 3503 and 3513. If initial site grading or brush removal were to occur during nesting season, then it likely would destroy bird nests, including eggs or nestling birds. One special-status species, the burrowing owl, is unlikely to flee the site during construction, due to its characteristic behavior of taking cover in burrows. Potential project impacts and an avoidance and mitigation strategy for burrowing owl are presented below.

Numerous species of birds can become entrapped in vertical or horizontal open pipes with diameters from 1 to 10 inches. Cavity-nesting species are particularly vulnerable. Examples of cavity-nesting birds protected under the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code Sections 3503 and 3513 that have been have been found dead inside open pipes include Say's phoebes, owls, woodpeckers, kestrels, and ash-throated flycatchers (American Bird Conservancy 2011, Brean 2011). Birds may enter into pipes either in search of nest sites or food and become entrapped. Once inside the pipe, they cannot open their wings to fly, and cannot climb out on the smooth interior surface. Once entrapped, they die from starvation and dehydration.

Project impacts to nesting birds can be reduced or offset through implementation of Mitigation Measures VEG-1 through MM VEG-6 (Section 4.3.7) and MM WIL-1 (Wildlife Impact Avoidance and Minimization), below. These measures would require biological monitoring during construction activities, worker environmental awareness training, restoration of temporarily impacted areas, compensation for permanently impacted habitat at a minimum 1:1 ratio, minimization of impact areas, vehicle speed limits of 15 miles per hour, protection measures to

prevent wildlife entrapment in trenches, pipes, or other facilities or supplies, and control of fugitive dust. In addition, Mitigation Measure WIL-3 (Pre-Construction Nest Surveys and Impact Avoidance Measures for Migratory Birds) describes pre-construction surveys, buffer areas, and other requirements to avoid bird mortality. Some birds will likely nest in the project area during construction, even after initial grading and clearing. Depending on the species, birds may nest on the ground close to equipment; within the open metal framework of the panel support structures; on buildings, foundations, structures, or construction trailers; or on idle vehicles or construction equipment left overnight or during a long weekend. In areas where construction is phased (e.g., footings, or tower structures) birds may quickly use these features as nest sites. The species most likely to nest in the project area during construction are common ravens, house finches, and mourning doves, all of which are protected by the MBTA and Fish and Game Code Sections 3503 and 3513. Due to the high probability that birds may nest on site during construction, MM WIL-3 requires regular monitoring of the work area throughout the breeding season. In some cases, it may be necessary to reduce buffer areas or to remove or relocate a bird nest in coordination with the resource agencies to proceed safely with construction. These measures are expected to effectively minimize adverse impacts to nesting birds on the site and to offset habitat loss through the acquisition and management of offsite lands. Even with implementation of these measures, the project would result in an unavoidable residual net loss of habitat at the project site.

Infrastructure and construction equipment could cause collision hazards to birds during project construction. These construction phase hazards would be less important than similar collision hazards that could occur during the O&M phase. These potential impacts are discussed in Section 4.4.12.

Burrowing Owl. Burrowing owls have been observed on the site during winter and migratory seasons, but not during breeding season (Section 3.4). However, the habitat on the project site is suitable, and burrowing owls could occupy the site in low numbers in future breeding seasons. Potential direct project impacts to burrowing owls would be similar to those described for nesting birds, but construction activities also could destroy occupied burrows or cause the owls to abandon burrows during any season. If owls were present, construction during the breeding season could cause nest abandonment, or the incidental loss of fertile eggs or nestlings. Burrowing owls and their nests are protected under federal and State laws and regulations, including the MBTA and the California Fish and Game Code. These impacts can be mitigated in part through implementation of Mitigation Measures VEG-1 through MM VEG-6 (Section 4.3.7); and MM WIL-1 and MM WIL-3 summarized above and presented in full, below. These measures would require biological monitoring during construction activities, worker environmental awareness training, restoration of temporarily impacted areas, compensation for permanently impacted habitat at a minimum 1:1 ratio, minimization of impact areas, vehicle speed limits of 15 miles per hour, control of fugitive dust, preconstruction surveys for nesting birds, and buffers around active nests. However, because burrowing owls characteristically take cover in burrows, the additional Mitigation Measure WIL-4 (Burrowing Owl Impact Avoidance, Minimization, and Compensation Measures) is required to further minimize or offset potential impacts. This measure requires preconstruction surveys at any time of year, to account for breeding or wintering owls. Passive relocation (CDFG 2012) may be utilized for active burrows in any work area, outside of the breeding season. If needed, disturbance-free buffers would be established around any active burrows during the breeding season. If active burrowing owl burrows are

destroyed during construction (after passive relocation of the owls), habitat loss would be offset as described in MM VEG-6. These measures are expected to effectively avoid any take of burrowing owls by excluding them from the project area or if active nests are present, by avoiding disturbance in surrounding buffer areas. These measures also are expected to offset habitat loss, though there would be a residual net loss of habitat at the project site.

Golden Eagle. Golden eagles are protected under the federal Bald and Golden Eagle Protection Act (BGEPA) as well as the MBTA. The project site does not provide suitable golden eagle nesting habitat. However, the entire DHSP project area provides suitable foraging habitat, and is within 10 miles of known golden eagle nesting territories located in the Eagle Mountains, Coxcomb Mountains, and Chuckwalla Mountains. These territories comprise eight golden eagle nests that were inactive in 2010, and one nest where eagle activity was observed but no young were fledged in 2010 (BLM 2011b; see Section 3.4). Since preparation of the Draft EIS, the 10-mile radius surrounding the project area was re-surveyed for golden eagle nesting activity during spring 2012. Early nesting activity ("nest decoration") was observed at one nest, but there was no subsequent activity; no eggs or young were present in the nest, and the adult golden eagles did not remain at the site (L. F. LaPre 2012, personal communication). There have been no subsequent surveys for nesting activity. Human intrusions near golden eagle nest sites in other areas have resulted in nest abandonment; high nestling mortality when young go unattended due to altered behavior by the parent birds; premature fledging; and ejection of eggs or young from the nest (Pagel 2010). Under the BGEPA, nest abandonment or decreased golden eagle reproductive success caused by substantial interference with normal breeding, feeding, or sheltering behavior, would constitute "take." Golden eagles would be likely to forage on the solar facility site at any time of year, particularly during winter and migration seasons due to larger numbers of golden eagles in the region and their larger winter foraging ranges. Project construction would eliminate 1,300 acres of suitable foraging habitat from within the likely foraging ranges of known nesting territories in the surrounding mountains. During years when golden eagles nest in any of the territories surrounding the site, the project could affect their foraging habitat. This habitat loss may also affect golden eagle foraging during winter and migratory seasons, or may affect foraging by unmated golden eagles during the nesting season. The project area represents only about 0.6 percent potential foraging habitat within the presumed 10-mile foraging radius for any given territory, and much of the foraging habitat for local golden eagle territories is protected within Joshua Tree National Park (JTNP) or through other land use designations. However, the project would contribute to an ongoing cumulative regional loss of golden eagle foraging habitat, as described in Section 4.4.16). Impacts to golden eagle foraging habitat can be offset through Mitigation Measure VEG-6 (Section 4.3.7), which would require a minimum 1:1 compensation ratio for project impacts to vegetation and habitat, including suitable golden eagle foraging habitat.

Golden eagle nesting territories in the Eagle and Coxcomb mountains are within or adjacent to JTNP and adverse effects to these nesting territories would therefore affect JTNP biological resources. Project construction is not expected to cause substantial direct disturbance (e.g., noise, lighting, visual disturbance) to nest sites in the local nesting territories, due to their distance from the site. However, implementation of Mitigation Measure WIL-5 (Golden Eagle Pre-construction and Construction Phase Surveys) requires annual monitoring during nesting season, and requires the project owner to prepare and implement an adaptive management plan if golden eagles are found nesting in the area at any time during project construction. Additionally,

Mitigation Measure WIL-6 (Bird and Bat Conservation Strategy) would require the project owner to prepare and implement an overall strategy to avoid, minimize, or mitigate project impacts to birds and bats, including golden eagles, in consultation with the USFWS. The proposed mitigation measures are expected to effectively avoid any take of golden eagles and to offset habitat loss, though there would be a residual net loss of foraging habitat at the project site.

Infrastructure and construction equipment could cause collision or electrocution hazards to golden eagles and other birds during project construction. These construction phase hazards would be less important than similar collision and electrocution hazards that could occur during the O&M phase of the project, the gen-tie line, or alternatives. These potential impacts are discussed in Section 4.4.12.

Other Special-Status Raptors. Several other special-status raptors have been reported on or near the project site, or are likely to occur in the area, at least during limited times of year.

Several migratory raptor species, including Cooper's hawk, sharp-shinned hawk, ferruginous hawk, northern harrier, merlin, and Swainson's hawk, short-eared owl, and long-eared owl, spend winters in the southern California deserts or, (for Swainson's hawk) migrate through the region en route between breeding habitat to the north and wintering habitat farther south. Project construction would eliminate or degrade foraging habitat for these species throughout the project area. Impacts to raptor foraging habitat can be offset through Mitigation Measure VEG-6, which requires compensation for permanent impacts to vegetation at a minimum 1:1 ratio.

Prairie falcon has not been reported in the project area, but would be expected to nest in the surrounding mountains, including the mountains within JTNP, and to forage over the project site at any time of year, as described for golden eagle. Adverse effects to any nesting territories based within JTNP would affect JTNP biological resources. The project's potential impacts to prairie falcon nesting and foraging habitat would be similar to those described for golden eagle. Construction of the proposed project or its alternatives has minimal potential to affect prairie falcon nest sites, but does have the potential to eliminate foraging habitat within range of nesting territories. The prairie falcon is not Fully Protected under the California Fish and Game Code, but as a bird of prey, it is protected under the federal MBTA and the California Fish and Game Code Section 3503.5. The impact to foraging habitat can be offset through Mitigation Measure VEG-6, although there will still be a residual net loss of foraging habitat at the project site.

Infrastructure and construction equipment could cause collision or electrocution hazards to golden eagles and other birds during project construction. These construction phase hazards would be less important than similar collision and electrocution hazards that could occur during the O&M phase of the project, the gen-tie line, or alternatives. These potential impacts are discussed in Section 4.4.12.

Gila Woodpecker. Gila woodpecker was observed within the project area while setting up the winter point count locations, but was not observed during the subsequent 2011 winter or spring point counts. In spring 2012, all desert dry wash woodland habitat was surveyed to determine presence or absence of breeding Gila woodpeckers, but no further Gila woodpecker observations were recorded (see Appendix C.20). Blue Palo Verde–Ironwood Woodland (Desert Dry Wash Woodland) vegetation on the site may provide marginally suitable Gila woodpecker nesting habitat (see Section 3.4), and there is a low possibility that it may nest on the site, or that the project site is near an occupied nesting territory. Gila woodpecker is a state-listed endangered species.

In addition, as a native bird, it is protected under the MBTA and California Fish and Game Code. Adverse project impacts to habitat can be offset through implementation of MM VEG-6 (Provide Off-Site Compensation for Impacts to Vegetation and Habitat), which requires compensation for impacts to Blue Palo Verde–Ironwood Woodland (Desert Dry Wash Woodland) at a ratio of 3:1. Direct impacts to nesting Gila woodpeckers would be avoided through implementation of MM WIL-3. The proposed mitigation measures are expected to effectively avoid any take of Gila woodpecker and to offset habitat loss, though there would be a residual net loss of microphyll woodland habitat at the project site.

Special-Status Passerines. The desert vegetation and adjacent mountains provide foraging, cover, or breeding habitat for resident and migratory birds. In addition to the species described above, 7 special-status birds have been observed or have a moderate to high likelihood of occurring on the site: Lucy's warbler, Bendire's thrasher, scrub jay (Eagle Mountains population), Le Conte's thrasher, loggerhead shrike, Vaux's swift, and vermillion flycatcher (See Section 3.4). Three of these species, scrub jay, Lucy's warbler, and Vaux's swift, were seen during migration seasons and are unlikely to use the site except during brief flyover or stopover periods. Each of the other species may nest on site (see potential for occurrence in Table 3.4-2). Potential project impacts to these species would be the same as those described for nesting birds. These impacts can be mitigated through implementation of Mitigation Measures VEG-1 through MM VEG-6 (Section 4.3.7), MM WIL-1 (Wildlife Impact Avoidance and Minimization), and MM WIL-3 (Pre-Construction Nest Surveys and Impact Avoidance Measures for Migratory Birds). These measures would require biological monitoring during construction activities, worker environmental awareness training, restoration of temporarily impacted areas, compensation for permanently impacted habitat at a minimum 1:1 ratio, minimization of impact areas, vehicle speed limits of 15 miles per hour, control of fugitive dust, preconstruction surveys for nesting birds, and buffers around active nests. These measures are expected to effectively minimize adverse impacts to special-status birds on the site and to offset habitat loss through the acquisition and management of offsite lands. Even with implementation of these measures, the project would result in an unavoidable residual net loss of habitat at the project site.

Infrastructure and construction equipment could cause collision hazards to birds during project construction. These construction phase hazards would be less important than similar collision hazards that could occur during the O&M phase. These potential impacts are discussed in Section 4.4.12.

Special-Status Bats. Several special-status bats (pallid bat, western mastiff bat, California leaf-nosed bat, pocketed free-tailed bat, big free-tailed bat, and Townsend's big-eared bat) could use the project site for foraging, but no suitable roosting habitat is available on the site for these species. Project construction could adversely impact special-status bats through the elimination of desert shrubland foraging habitat, particularly the Blue Palo Verde–Desert Ironwood Woodland (Desert Dry Wash Woodland) habitat. During the project's construction phase, storage ponds and lighting would be likely to attract nocturnal insects and, in turn, bats; possibly including special-status bats. These attractants could lead to increased numbers of bats in the vicinity of structures or equipment, which could cause collision hazards. These potential impacts can be mitigated in part through implementation of Mitigation Measures VEG-1 through MM VEG-6 (Section 4.3.7) and Mitigation Measure WIL-6 (Bird and Bat Conservation Plan), which would require the project owner to prepare and implement an overall strategy to avoid, minimize, or mitigate project impacts to birds and bats in consultation with the USFWS. These measures are

expected to effectively minimize potential hazards to bats, including special-status species, and to offset habitat loss. Even with implementation of these measures, the project would result in an unavoidable residual net loss of habitat at the project site.

Palm Springs Round-Tailed Ground Squirrel. Project construction would eliminate marginally suitable habitat for Palm Springs round-tailed ground squirrel throughout the project site, but would not affect aeolian sands and mesquite hummocks that characterize its primary habitat. Direct effects of project construction would include the same types of effects as described for general wildlife (habitat loss, mortality, and disturbance by noise and lighting). Implementation of Mitigation Measures VEG-1 through MM VEG-6 (Section 4.3.7) and MM WIL-1 (Wildlife Impact Avoidance and Minimization) would minimize or offset these impacts. These measures would require biological monitoring during construction activities, moving special-status wildlife out of harm's way, worker environmental awareness training, restoration of temporarily impacted areas, compensation for permanently impacted habitat at a minimum 1:1 ratio, minimization of impact areas, vehicle speed limits of 15 miles per hour, and control of fugitive dust.

American Badger and Desert Kit Fox. Recently active desert kit fox burrows and inactive American badger burrows occur on the project site (Section 3.4). Although badgers were apparently absent during field surveys, a badger could construct a burrow and occupy the site prior to initiation of project construction. Potential direct impacts to American badger and desert kit fox include mechanical crushing of individuals or burrows by vehicles and construction equipment, noise, dust, and loss of habitat. The tortoise exclusion fence could entrap desert kit foxes or badgers in the project site and construction area if either species is on the site when the fence is built. Animals trapped within the fence would almost surely die from direct or indirect effects of project construction (e.g., vehicle strike, inability to find sufficient food or thermal cover). Implementation of Mitigation Measures VEG-1 through MM VEG-6 (Section 4.3.7) and MM WIL-1 (Wildlife Impact Avoidance and Minimization) would minimize or offset these impacts. These measures would require biological monitoring during construction activities, moving special-status wildlife out of harm's way, worker environmental awareness training, restoration of temporarily impacted areas, compensation for permanently impacted habitat at a minimum 1:1 ratio, minimization of impact areas, vehicle speed limits of 15 miles per hour, and control of fugitive dust. In addition, MM WIL-7 (Desert Kit Fox and American Badger Impact Avoidance) would require the project owner to passively relocate desert kit fox or American badgers found within the project area. Due to the recent outbreak of canine distemper virus in the local desert kit fox population, passive relocation planning must minimize or avoid any potential of worsening the outbreak, e.g., by causing diseased animals to spread the virus farther, or causing increased vulnerability to infection in healthy animals due to uncharacteristic wandering or increased physiological stress due to relocation. Relocation planning must also include measures to prevent desert kit foxes from returning to the project site after passive relocation (e.g., by burrowing beneath fences). MM WIL-7 would require the project owner to coordinate with CDFG to maximize efficacy of the passive relocation effort and to avoid take.

Nelson's Bighorn Sheep, Burro Deer, and Yuma Mountain Lion. The project site provides marginally suitable foraging habitat and potential movement habitat for Nelson's bighorn sheep and burro deer (their primary habitat areas are in the surrounding mountains). Given the potential presence of these species, the Yuma mountain lion may also use the solar facility site infrequently for foraging or for movement among surrounding mountain ranges. Loss of habitat on

the project site, and expected off-site impacts such as noise, lighting, and disturbance in surrounding habitat have the potential to disrupt animals from foraging or moving through the area, and could increase risk of mortality or injury by collision with vehicles on roadways. Potential impacts to foraging habitat would be relatively minor due to the location of the solar facility site, 1.5 to 1.7 miles from the toeslopes of the nearest mountains (Coxcomb Mountains to the northeast and Eagle Mountains to the west). These impacts would be further minimized or offset through implementation of Mitigation Measures VEG-1 through MM VEG-6 (Section 4.3.7) and MM WIL-1 (Wildlife Impact Avoidance and Minimization). These measures would require biological monitoring during construction activities, worker environmental awareness training, restoration of temporarily impacted areas, compensation for permanently impacted habitat at a minimum 1:1 ratio, minimization of impact areas, vehicle speed limits of 15 miles per hour, and control of fugitive dust. Another important potential impact to all three species is the reduced opportunity for movement among isolated desert mountain ranges where their primary habitat is found. One potential result of this reduced movement opportunity is the decline or extirpation of local populations in individual mountain ranges, perhaps due to stochastic events such as a series of poor rainfall years which may cause reproductive failure. Without immigration from another location, declining local populations may become extinct. Impacts to wildlife movement are discussed further, below.

Wildlife Movement. The DHSP solar facility site is immediately south of the recently approved Desert Sunlight site. At the time of commencement of analysis for this EIS in September 2011, only a small portion of the Desert Sunlight site had been disturbed; therefore, the effects of the DHSP solar facility on wildlife movement are analyzed here without the presumption that the remainder of Desert Sunlight would be built. Please see the Cumulative Impacts section, below, for an analysis of the cumulative impacts of DHSP, Desert Sunlight, and other projects to wildlife movement.

The proposed DHSP solar facility site is located roughly midway between the three mountain ranges that surround the upper Chuckwalla Valley, including the Eagle Mountains and Coxcomb Mountains within JTNP. Therefore, the project's effects to wildlife movement and biological connectivity within the upper Chuckwalla Valley could affect biological resources within JTNP. The site presently contributes to potential wildlife movement routes through the Valley for many species, such as shrubland birds, and ground-dwelling small mammals and reptiles, as well as burro deer and mountain lion, particularly for southwest to northeast movement between the Chuckwalla DWMA (west of the site) and the Coxcomb Mountains. This contribution to movement habitat is limited, however, by existing land use patterns south and east of the proposed solar facility site, and by the DSSF project to the north (see Cumulative Impacts analysis, below). Much of the open space to the south and east of the DHSP solar facility site includes large tracts of land used for agriculture (jojoba, date palms, etc.). Some of these fields are actively farmed, while others are not. However, degraded habitat, fences, and other alterations limit their function for wildlife movement through the areas within 3 miles of the southern boundary of the solar facility site. To the east of the project site, a small (0.2 to 0.5 mile wide) corridor of open space exists between the site boundary and another large tract of agricultural land. Project construction would further limit connectivity by eliminating movement opportunities across the site for most wildlife species, but the actual consequence to wildlife movement would be minor due to the land uses and movement barriers described above. Intermountain movements are more likely to occur in the less disturbed northern reaches of the Chuckwalla

Valley. The limited wildlife connectivity value of the project site is also explained in Section 2.17, which assesses a proposal to specify or designate a wildlife movement route through the abovementioned small corridor to the east of the proposed solar facility site.

Suitable movement habitat on open space directly north of the DHSP site is within the Desert Sunlight site, which is currently under construction.

The most important wildlife movement habitat in the upper Chuckwalla Valley is to the west (in the Chuckwalla DWMA and CHU) and to the north of the Desert Sunlight site. To the west of the solar facility site, wildlife movement is generally unencumbered through the open space areas extending to JTNP, with the exception of Eagle Mountain and Kaiser Roads, and the inactive Kaiser rail line. To the north, there is extensive undisturbed upper bajada habitat between the northern extent of the DSSF site and the bases of the mountain ranges. These lands contain relatively uninterrupted contiguous open space and undisturbed habitat, and are valuable for wildlife habitat connectivity among the surrounding mountain ranges. However, the Colorado River Aqueduct limits terrestrial wildlife movement to the north to a few "siphon" sites (Section 3.4.6).

The upper Chuckwalla Valley is considered an important habitat linkage, characterized by diffuse gene flow between the Mojave and Colorado portions of the desert tortoise's range (USFWS 2011b). There are only a few such habitat linkage areas providing connectivity among desert tortoise populations within conservation areas (e.g., DWMAs) in the Mojave and Colorado portions of their geographic range. The existing pattern of public and private land ownership, and potential for future development in the I-10 corridor, may threaten the viability of these linkages. The USFWS identifies the upper Chuckwalla Valley and upper Pinto Wash, especially along the upper bajadas of the Eagle and Coxcomb Mountains, as the most viable remaining linkage in this region. Therefore, the USFWS identifies conservation of the smaller-scale habitat accessibility within remaining portions of the habitat linkage as essential; these include (1) culverts and bridges beneath I-10; and (2) minimizing the future loss of desert tortoise habitat now providing habitat connections to these crossings. Therefore, the USFWS identified specific conservation measures in its Biological Opinion for the Desert Sunlight project to maintain habitat connectivity in this area. One of these measures specifically targets compensation land acquisition within the BLM/private landownership checkerboard along the I-10 corridor between Cactus City and Desert Center. An additional conservation measure entails planning and effectiveness monitoring for desert tortoise habitat linkage north of the Desert Sunlight site, in the vicinity of the Colorado River Aqueduct.

Mitigation Measure VEG-6 (Provide Off-Site Compensation for Impacts to Vegetation and Habitat) would offset project impacts to wildlife movement in the upper Chuckwalla Valley. MM VEG-6 incorporates the requirement that "The primary focus area for acquiring parcels to maintain/improve connectivity will be along the I-10 corridor between Desert Center and Cactus City with a priority on parcels that connect conserved lands on either side of the I-10 through large culverts or bridges; the habitat compensation ratio for mitigation lands along the I-10 corridor shall be 1:1 for each acre of total long-term and permanent disturbance." Because the project site is modeled as low habitat value (Nussear et al. 2009), has low density of tortoises and their sign (Section 3.4), much of the local habitat has been disturbed and fragmented, and the most important desert tortoise movement habitat in the area lies west of the project footprint, project specific effects of the DHSP project would not substantially alter desert tortoise con-

nectivity in this region. Additional conclusions regarding wildlife movement are deferred to the cumulative impacts analysis.

Wildlife Management Areas. The solar facility site is not within either the Chuckwalla DWMA or Chuckwalla CHU. The western edge of the southwestern parcel is adjacent to the Chuckwalla DWMA, and 46 acres of the Palen-Ford WHMA are included within the northern portion of the northeastern parcel (see Table 4.4-1 and Figure 3.4-1 in Appendix A). The 46 acres of the WHMA that are within the proposed solar facility site are isolated from the remainder of the WHMA and key WHMA resources, including the dunes and playa system to the east, by the intervening DSSF project now under construction (see Figures 3.1-1 and 3.4-1). The functionality of this portion of the WHMA is thus reduced compared to the WHMA as a whole. As a result, the effects of the DHSP on this portion of the WHMA would be diminished by its configuration, but would not be eliminated. Construction activities have the potential to directly impact species utilizing these special management areas as a result of habitat loss (WHMA only), noise, night lighting, and dust. Mitigation measures for these impacts would be as described above. Implementation of these measures would reduce direct impacts to adjacent wildlife management areas and the WHMA within the site.

Indirect Effects

In addition to direct impacts, project construction could have several indirect impacts to wildlife and its habitat, including introduction or spread of invasive weeds, depletion of groundwater and subsequent effects to groundwater-dependent vegetation and habitat, effects to displaced wildlife (establishing new home ranges, competition for resources, etc.), and increased predation due to predator "subsidies" (e.g., water storage ponds, litter) provided during construction. The indirect effects to wildlife of invasive weeds and groundwater depletion, and mitigation of those effects, are as described in Section 4.3. Herbicide application to mitigate potential impacts of invasive weeds may have secondary effects on wildlife, described below.

Herbicide Application. The adverse impacts of invasive weeds would be minimized by Mitigation Measure VEG-9 (Prepare and Implement an Integrated Weed Management Plan), which would require the project owner to monitor weed occurrence throughout the project area, and to control substantial weed infestations using herbicides or mechanical means to remove weeds. Herbicides may pose risks to terrestrial or aquatic animal species. Herbicides that persist on-site could adversely affect animals that feed on target plants or are exposed to the herbicides (e.g., by digging or rolling in treated soil). Accidental spills and herbicide drift from treatment areas could reach non-target areas on public or private lands near treatment areas. The project's Draft Integrated Weed Management Plan (IWMP; see Appendix C.10) includes specific measures to avoid application at project perimeters, in the vicinity of native vegetation or habitat, and to avoid overspray or spillage in any areas. In addition, the Draft IWMP describes proposed usage and formulations of herbicides at the DHSP. Use of herbicides would be in accordance with the measures and standard operating procedures in the BLM's Herbicide PFEIS. As described in Chapter 1, Section 1.9.1, the DHSP EIS is tiered to the Herbicide PFEIS. Complying with the measures and standard operating procedures in the Herbicide PFEIS, MM PHS-9, as well as other limitations described in the Draft IWMP, would avoid potential adverse effects of herbicides to wildlife. Risks from proposed herbicides would be similar to, or less than, risks from currently-available herbicides. Buffer zones would be used to reduce the risks from herbicide treatments. The restrictions on herbicide use and application described in the

Integrated Weed Management Plan are expected to effectively avoid adverse impacts of herbicide application to wildlife.

Wildlife Displacement. Construction activities would cause most mobile vertebrate wildlife to leave, or attempt to leave the site. Animals dispersing from the site would be subject to further adverse effects, potentially including mortality. They would be at increased risk of predation and possible vehicle collisions as they flush from cover during site clearing. After leaving their home territories, displaced animals may be unable to find suitable food or cover in new, unfamiliar areas. They may attempt to return to their home ranges, possibly resulting in "fence-walking" and consequent exposure to predation or other effects. If they find food and other resources, these may be within the occupied territory of another individual of the same or similar species, resulting in competition for resources. These adverse displacement effects would apply to common wildlife species and to special-status species, including desert tortoises, which would be translocated from the site if found during preconstruction surveys. Adverse impacts of wildlife displacement are an unavoidable residual impact of project construction.

Increased Predation. Project construction activities could provide resources in the form of trash, litter, or water, which attract and subsidize unnaturally high numbers of predators such as common ravens, coyotes, and feral dogs. This influx of predators could cause unnaturally high predation pressure on desert tortoises and other wildlife species in the vicinity. Predation by ravens on juvenile desert tortoises has been researched extensively. Common raven populations in the California desert have increased in response to expanding human use of the desert. The current level of raven predation on juvenile desert tortoises is considered an unnatural occurrence (USFWS 2011a). Ravens and coyotes habituate to human activities and are subsidized by food (trash, road killed animals), water (irrigation or dust control overspray), and (for ravens) new perching, roosting, and nesting sites (transmission line structures and other structures) that are introduced or augmented by human encroachment. Feral dogs also have emerged as major predators of the tortoise. Dogs may range several miles into the desert and have been found digging up and killing desert tortoises (USFWS 2011a).

There are numerous anthropogenic (human-caused) subsidies for ravens and other predators already present in the area. Thus, tortoises may already be subject to elevated predation. Additional loss of juvenile tortoises due to additional raven subsidies could have a long-term effect on the tortoise population by reducing juvenile tortoise survivorship (Boarman et al. 2006; Boarman 2003). The population-level consequences of this effect may not be apparent for years because tortoises do not typically reach sexual maturity until 15 to 20 years of age. Due to the solar facility site's proximity to JTNP, the project's predator subsidy effects could extend to desert tortoise and other wildlife populations within the Park.

The project's potential for indirect impacts to increased predation on native wildlife, including desert tortoises, can be mitigated in part through implementation of Mitigation Measures VEG-1 (Assign a Designated Biologist and Biological Monitors), MM VEG-2 (Conduct Biological Monitoring and Reporting during Project Construction, Operations, and Decommissioning), MM VEG-3 (Prepare and Implement a Worker Environmental Awareness Program), and MM WIL-1 (Wildlife Impact Avoidance and Minimization). In addition, MM WIL-8 (Raven Monitoring, Management, and Control Plan) would require management of all potential predator subsidies, monitoring of raven presence and abundance, implementation of specific control measures as needed, and contribution to the region-wide Raven Management Program. These measures are

expected to effectively minimize potential for project-related increased predation on native species.

Operation and Maintenance

O&M activities of Alternative 4 could directly and indirectly affect wildlife and wildlife habitat on site due to long-term habitat alteration by the solar panels and other facilities, management of vegetation on-site for O&M, and ongoing potential to introduce new weed species or facilitate the spread of existing species.

Direct Effects

On-Site Habitat. Project vegetation management during O&M would consist of mowing, weeding, or other vegetation control for compatibility with facility operations. In addition, altered habitat (particularly shade beneath the solar panels) will alter existing shrublands and wildlife habitat suitability. Overall impacts of these O&M procedures would prevent recovery of natural wildlife habitat conditions within the site throughout the life of the project. Due to security and desert tortoise exclusion fences, as well as degraded habitat conditions throughout the site, the project site would remain generally unsuitable for many wildlife species, including special-status species addressed previously, throughout the life of the project. These long-term impacts to habitat can be reduced through implementation of Mitigation Measures VEG-1 through MM VEG-6, which would require biological monitoring during ground-disturbing activities, moving special-status wildlife out of harm's way, worker environmental awareness training, restoration of temporarily impacted areas, and compensation for permanently impacted habitat at a minimum 1:1 ratio (Section 4.3.7).

Noise and Lighting. Some birds and other small wildlife species would re-occupy the solar facility site once construction activities are completed, where ongoing O&M noise and lighting may affect them. Noise and lighting may also affect wildlife in the nearby off-site habitat. These effects would be qualitatively similar to the description of construction phase effects of noise and lighting, but would be of lesser magnitude. Mitigation Measure WIL-1 (Wildlife Impact Avoidance and Minimization) would minimize these impacts.

Evaporation Pond. The proposed evaporation pond could affect wildlife by posing a drowning hazard; a water subsidy for predators; salt encrustations, which can interfere with flight or other activity; or salt toxicosis (poisoning). Terrestrial wildlife exposure to the evaporation ponds would be limited by the perimeter exclusion fencing, and any animals that could encounter the ponds would likely be those that remain within the fenceline after the fence is erected at the start of construction activities. Birds could remain vulnerable to these hazards. Mitigation Measure WIL-1 requires covering the evaporation pond to prevent these impacts.

If the evaporation pond dries completely at times, residual salts could become airborne and cause dust or health impacts to wildlife in surrounding habitat. Mitigation Measure WIL-1 would minimize this effect by ensuring that salt sediment is promptly removed at regular intervals from the evaporation pond.

Solar Panel Light, Glare, and Collision Risk. Large-scale solar facilities present a relatively new and un-researched risk for bird collisions. Studies conducted at the Solar One facility, a central receiver solar power plant near Daggett, California, indicated that bird mortality consisted predominantly of collisions with mirrors (McCrary et al 1986). However, photovoltaic solar

panels are designed to absorb, rather than reflect, light. While concentrating solar power systems are designed to reflect up to 90 percent of incoming sunlight, the glare and reflectance from PV panels is much lower; as little as two percent of direct and indirect sunlight is reflected (FAA Solar Guide Section 3.1.2, 2012). Nonetheless, glare is associated with the proposed technology (see Appendix G-5, which shows a time-lapse visual simulation of the project and its minimal glare effects). To date, little is known regarding the avian response to reflection or glare from PV solar technology; however, it is likely that glare will affect birds to some degree because the panels would reflect light and images, and might be mistaken for open sky or water. Light reflecting from photovoltaic panels could cause an increase in glare and Polarized Light Pollution (PLP). According to Horvath et al. (2009), PLP caused by anthropogenic structures can alter the ability of wildlife to seek out suitable habitat, detect or elude predators, or effectively navigate using natural polarized light patterns, ultimately affecting dispersal and reproduction. Available information is not sufficient to allow quantification of the potential hazard. Mitigation Measure WIL-6 (Bird and Bat Conservation Plan) requires an evaluation of potential collisions with solar panels, or other effects of polarized light on birds and bats, and implementation of adaptive management measures as appropriate to address those potential impacts. This measure is expected to mitigate this potential risk to the extent feasible, but an unknown residual risk to birds may remain, even with implementation of the Bird and Bat Conservation Plan.

Collisions and Electrocutions. Solar panels and project infrastructure, such as overhead transmission and distribution lines, could cause collision or electrocution hazards to birds or bats during project O&M. These hazards would be similar to those described below under O&M phase effects of gen-tie line Alternative B, and would be mitigated to the extent feasible through Mitigation Measure WIL-6 (Bird and Bat Conservation Plan) which requires an evaluation of potential collisions and conservation measures to minimize risk.

Nesting Birds. Some species of birds will likely nest in the project area during facility O&M. The potential for impacts to nesting birds during O&M would be similar to those described during the construction phase for birds that may nest on the ground close to equipment, within the open metal framework of the panel structures, on buildings or other structures, or on idle construction equipment. The nesting behaviors of some native birds increases the likelihood that project O&M would require the removal or relocation of active nests in order to safely operate the facility. Mitigation Measure WIL-6 (Bird and Bat Conservation Plan) requires an evaluation of potential project hazards to birds and bats, and implementation of adaptive management measures as appropriate to address them. This measure is expected to mitigate this potential risk to the extent feasible, but an unknown residual risk to birds may remain, even with implementation of the Bird and Bat Conservation Plan.

Indirect Effects

The indirect effects of project O&M to wildlife and wildlife habitat include the introduction or spread of invasive weeds, depletion of groundwater and subsequent effects to groundwater-dependent vegetation and habitat, alteration of ephemeral surface water flows, and increased predation due to predator "subsidies." The indirect effects to wildlife of invasive weeds and groundwater depletion, and mitigation of those effects, are as described in Section 4.3. The indirect effects of predator subsidies during project O&M, and mitigation of those effects would be as described under indirect effects of construction.

Decommissioning

The proposed methods of decommissioning of the solar facility are summarized in Chapter 2. The expected operational lifetime of the project is 30 years; however, the actual life of the project could be longer or shorter. When permanent closure is appropriate, a decommissioning plan will be prepared and submitted to the BLM for review and approval. Closure strategies may include temporary "mothballing", removing old facilities and upgrading to newer solar technology, or complete removal of equipment and restoration of the land to BLM-approved specifications. Fully decommissioning the site would involve removal and demolition of above-ground structures, dismantling and removing concrete structures to a depth of 3 feet, removal of underground utilities within 3 feet of final grade, and excavation and removal of contaminated soils, if applicable (see Sections 2.4.6 and 2.9.4).

Impacts to wildlife resources would vary, according to the decommissioning strategy and the intended re-use of the site.

Direct Effects

Facilities removal during decommissioning would be expected to take place within the approved project footprint, and would not be expected to remove or degrade wildlife habitat, except through the effects of noise, lighting, or similar direct off-site impacts, as discussed under direct effects of construction. These impacts can be reduced through implementation of Mitigation Measures VEG-1 through MM VEG-5 **(**Section 4.3.7). Additionally, MM WIL-1 (Wildlife Impact Avoidance and Minimization), MM WIL-3 (Pre-Construction Nest Surveys and Impact Avoidance Measures for Migratory and Nesting Birds), MM WIL-6 (Bird and Bat Conservation Strategy), and MM WIL-8 (Raven Monitoring, Management, and Control Plan) would mitigate these impacts throughout the decommissioning phase.

If the ultimate re-use of the solar facility site will be to return it to natural open space, then the expected recontouring and replanting during decommissioning would have a net benefit to wildlife resources. This potential beneficial impact cannot be evaluated at this time, pending the final re-use decision and the details of the decommissioning plan.

Indirect Effects

The indirect effects of project decommissioning to wildlife and wildlife habitat include the introduction or spread of invasive weeds, depletion of groundwater and subsequent effects to groundwater-dependent vegetation and habitat, and increased predation due to predator "subsidies" provided during construction. The indirect effects to wildlife of invasive weeds and groundwater depletion, and mitigation of those effects, are as described in Section 4.3. The indirect effects of predator subsidies during project decommissioning, and mitigation of those effects would be as described under indirect effects of construction.

Mitigation Measures

MM VEG-1 Assign a Designated Biologist and Biological Monitors. (Text provided in Section 4.3, Biological Resources – Vegetation).

MM VEG-2 **Conduct Biological Monitoring and Reporting during Project Construction, Operations, and Decommissioning.** (Text provided in Section 4.3, Biological Resources – Vegetation).

MM VEG-3 **Prepare and Implement a Worker Environmental Awareness Program (WEAP).** (Text provided in Section 4.3, Biological Resources – Vegetation).

MM VEG-4 **Minimize Construction-Related Impacts.** (Text provided in Section 4.3, Biological Resources – Vegetation).

MM VEG-5 **Prepare and Implement a Vegetation Resources Management Plan.** (Text provided in Section 4.3, Biological Resources – Vegetation).

MM VEG-6 **Provide Off-Site Compensation for Impacts to Vegetation and Habitat.** (Text provided in Section 4.3, Biological Resources – Vegetation).

MM VEG-9 **Prepare and Implement an Integrated Weed Management Plan.** (Text provided in Section 4.3, Biological Resources – Vegetation).

MM WIL-1 **Wildlife Impact Avoidance and Minimization.** The project owner shall undertake the following measures during the construction, O&M, and decommissioning phases (as applicable) of the project and related facilities in a manner to avoid or minimize impacts to biological resources. Implementation of all measures shall be subject to review and approval by the BLM, Riverside County, and the Resource Agencies (CDFG and USFWS).

1. **Limit Disturbance Areas and Perimeter Fencing.** The boundaries of all areas to be disturbed (including staging areas, access roads, and sites for temporary placement of spoils) shall be delineated with stakes and flagging prior to disturbance, in consultation with the Designated Biologist. Spoils and topsoil shall be stockpiled in areas already disturbed or to be disturbed by construction, so that stockpile sites do not add to total disturbance footprint. All disturbances, project vehicles, and equipment shall be confined to the flagged areas. Parking areas, staging and disposal site locations shall similarly be located in areas without native vegetation or special-status species habitat.

2. **Minimize Road Impacts.** New and existing roads, road widening, or other road improvements shall not extend beyond the flagged impact area. All vehicles passing or turning around would do so within the flagged impact area or in previously disturbed areas. Where new access is required, the route shall be clearly marked (i.e., flagged and/or staked) prior to the onset of construction.

3. **Minimize Traffic Impacts.** Vehicular traffic shall be confined to existing designated routes of travel to and from the project site, and cross-country vehicle and equipment use outside designated work areas shall be prohibited. The speed limit shall not exceed 15 miles per hour within any part of the project area, maintenance roads for linear facilities, or unpaved access roads to the project site where desert tortoise clearance surveys and translocations have not been completed.

4. **Monitor During All Soil or Vegetation Disturbance.** Due to the possibility that desert tortoises, especially juveniles, may be found on the site after desert tortoise clearance surveys are completed and exclusion fencing is installed, the Designated Biologist or Biological Monitor shall be present at the site during all project activities that have potential to disturb soil, vegetation, or wildlife. The Designated Biologist or Biological Monitor shall walk immediately ahead of equipment during brushing and grading activities. Any ground-disturbing activities occurring prior to construction site mobilization (e.g., for geotechnical borings or hazardous waste evaluations) shall be monitored by a Designated Biologist or Biological Monitor. During all monitoring activities, the Designated Biologist or Biological Monitor will, to the extent practicable, actively or passively relocate wildlife out of harm's way, where consistent with all adopted mitigation measures and other project requirements.

5. **Minimize Impacts of Transmission/Pipeline Alignments, Roads, and Staging Areas.** Staging areas, materials laydown areas, and other ancillary or temporary disturbance areas shall be restricted to areas where desert tortoise clearance surveys have been completed and that have been enclosed within desert tortoise exclusion fencing. For transmission line construction or other activities outside of the fenced solar generator site, access roads, pulling sites and storage and parking areas shall be designed, installed, and maintained with the goal of minimizing impacts to native plant communities and sensitive biological resources. The Designated Biologist or Biological Monitor shall evaluate potential for special-status plants or wildlife at every potential disturbance site along the lengths of the gen-tie line prior to any construction-related disturbance, including access improvements. Specifically, site selection of any area to be permanently or temporarily disturbed for gen-tie line construction shall avoid any desert wash, desert microphyll woodland species (blue palo verde or desert ironwood), and any aeolian sand habitat wherever feasible. Where these sites cannot feasibly be avoided, the Designated Biologist shall outline site-specific requirements to minimize impacts to habitat and wildlife. These requirements shall include, but will not be limited to, pre-construction clearance surveys, exclusion fencing (e.g., for desert tortoise or Mojave fringe-toed lizard), on-site monitoring, and post-construction remediation.

6. **Implement APLIC Guidelines.** Transmission lines and all electrical components shall be designed, installed, and maintained in accordance with the Avian Power Line Interaction Committee's (APLIC's) Suggested Practices for Avian Protection on Power Lines (APLIC 2006) and Mitigating Bird Collisions with Power Lines (APLIC 1994) to minimize the likelihood of large bird electrocutions and collisions.

7. **Avoid Use of Toxic Substances.** Soil bonding and weighting agents used on unpaved surfaces shall be non-toxic to wildlife and plants.

8. **Minimize Lighting Impacts.** Facility lighting shall be designed, installed, and maintained to prevent side casting of light towards surrounding wildlife habitat. To minimize risk of avian collisions with project features, only flash-

ing or strobe lights shall be installed on features requiring safety lighting per FAA requirements.

9. **Minimize Noise Impacts.** To minimize disturbance to wildlife nesting or breeding activities in surrounding habitat, loud construction activities (e.g., pile driving) shall be avoided to the extent feasible from February 1 to August 31. Loud construction activities may be permitted from February 1 to August 31 only according to the provisions of the Nesting Bird Management Plan described in MM WIL-3.

10. **Avoid Vehicle Impacts to Wildlife.** Vehicle parking and storage shall be permitted only within the area enclosed by desert tortoise exclusion fencing to the extent feasible. No vehicles or construction equipment shall be moved prior to an inspection of the ground beneath the vehicle for the presence of desert tortoise or other wildlife. If a desert tortoise is observed, it shall be left to move on its own. If it does not move within 15 minutes, a Designated Biologist or Biological Monitor under the Designated Biologist's direct supervision may remove and relocate the animal to a safe location if temperatures are within the range described in the *Desert Tortoise Field Manual* (USFWS 2009: http://www.fws.gov/ventura/species_information/protocols_guidelines/) and in accordance with the Biological Opinion for the project. In order to minimize road strikes for all wildlife species, all access roads outside of the fenced project footprint shall be delineated with temporary desert tortoise exclusion fencing on either side of the access road, unless otherwise authorized by the BLM, Riverside County, USFWS, and CDFG. This protocol to avoid vehicle impacts to wildlife, including desert tortoises, shall be emphasized in the WEAP training (MM VEG-3).

11. **Avoid Wildlife Pitfalls:**

    a. **Backfill Trenches.** At the end of each work day, the Designated Biologist shall ensure that all potential wildlife pitfalls (trenches, bores, temporary detention basins, and other excavations) have been backfilled. If backfilling is not feasible, all trenches, bores, temporary detention basins, and other excavations shall be sloped at a 3:1 ratio at the ends to provide wildlife escape ramps, or covered completely to prevent wildlife access, or fully enclosed with desert tortoise-exclusion fencing. All potential pitfalls (trenches, bores, temporary detention basins, storage ponds, and other excavations) outside the fenced areas shall be inspected periodically, but no less than three times, throughout the day and at the end of each workday by the Designated Biologist or a Biological Monitor. Within the fenced area, potential pitfalls, including storage ponds, shall be inspected daily. Should a desert tortoise or other wildlife become trapped, the Designated Biologist or Biological Monitor shall remove and, if applicable, relocate it as described in the Desert Tortoise Translocation Plan. Any wildlife encountered shall be allowed to leave the area unharmed.

    b. **Avoid Entrapment of Desert Tortoise.** Any construction pipe, culvert, or similar structure with a diameter greater than 3 inches, stored less than

8 inches aboveground for one or more nights, shall be inspected for tortoises before the material is moved, buried, or capped. As an alternative, all such structures may be capped before being stored outside the fenced area, or placed on pipe racks.

c. **Avoid Entrapment of Nesting or Migratory Birds.** All pipes or other construction materials or supplies will be covered or capped in storage or laydown areas and at the end of each work day in the solar field or gen-tie line during construction, O&M, and decommissioning phases. No pipes or tubing of sizes or inside diameters ranging from 1 to 10 inches will be left open either temporarily or permanently.

12. **Minimize Standing Water.** Water applied to dirt roads and construction areas (trenches or spoil piles) for dust abatement shall use the minimal amount needed to meet safety and air quality standards in an effort to prevent the formation of puddles, which could attract desert tortoises and common ravens to construction sites. A Biological Monitor shall patrol these areas to ensure water does not puddle. Appropriate actions to minimize standing water shall be implemented by the project owner or by the Biological Monitor in coordination with BLM.

13. **Injured Wildlife.** Any injured or dead wildlife encountered during project-related activities (constriction, O&M, and decommissioning) shall be reported to the Designated Biologist or Biological Monitor(s) immediately. The Designated Biologist or Biological Monitor will contact CDFG or a CDFG-approved veterinary facility immediately to report the observation and determine the best course of action. For special-status species, the Designated Biologist shall notify the BLM, USFWS, and/or CDFG, as appropriate, within 24 hours of the discovery.

14. **Dispose of Road-Killed Animals.** Road-killed animals or other carcasses detected on roads near the project area shall be picked up immediately and delivered to the Designated Biologist or Biological Monitor. For all road-killed animals, the Designated Biologist shall retain the carcass in a freezer on site and contact CDFG within 30 working days for guidance on disposal, storage, or curation. For any road-killed special-status species, the Biological Monitor shall contact CDFG and USFWS (for golden eagle or federally-listed species, including desert tortoise) within one working day of receipt of the carcass for guidance on disposal, storage, or curation of the carcass. The Biological Monitor shall report the special-status species observations as described in MM VEG-1.

15. **Minimize Spills of Hazardous Materials.** All vehicles and equipment shall be maintained in proper working condition to minimize the potential for fugitive emissions of motor oil, antifreeze, hydraulic fluid, grease, or other hazardous materials. The Designated Biologist shall be informed of any hazardous spills immediately as directed in the project Hazardous Materials Management Plan. Hazardous spills shall be immediately cleaned up and the contaminated soil properly disposed of at a licensed facility. Fueling and

servicing of construction equipment shall take place only at a designated area approved by the Designated Biologist. Service/maintenance vehicles shall carry a bucket and pads to absorb leaks or spills.

16. **Worker Guidelines.** All trash and food-related waste shall be placed in self-closing raven-proof containers and removed regularly from the site to prevent overflow. Workers shall not feed wildlife or bring pets to the project site, including the logistics, parking, and other ancillary areas. Except for law enforcement personnel, no workers or visitors to the site shall bring firearms or weapons. Vehicular traffic shall be confined to existing routes of travel to and from the project site, and cross-country vehicle and equipment use outside designated work areas shall be prohibited. The speed limit when traveling on dirt access routes within desert tortoise habitat shall not exceed 15 miles per hour.

17. **Implement Erosion Control Measures.** Standard erosion control measures shall be implemented for all phases of construction and O&M to prevent any sediment run-off from exposed slopes from entering state-jurisdictional stream-beds within or outside the project site or work areas along the gen-tie line. Sediment and other flow-restricting materials shall be moved to a location where they shall not be washed back into the stream. All disturbed soils and roads within the project site shall be stabilized to reduce erosion potential, both during and following construction, except that soil stabilizer use may be limited in portions of roads crossing washes or stream channels consistent with applicable water quality requirements.

18. **Remove Unused Material and Equipment.** All unused material and equipment, including soil and rock piles, will be removed upon completion of any activities located outside the permanently fenced area.

19. **Control and Regulate Fugitive Dust.** To reduce the potential for the transmission of fugitive dust, the project owner shall implement dust control measures as described in mitigation measures defined in the Air Quality section. In addition, reverse osmosis brine or sediment shall be promptly removed at regular intervals and disposed at an approved waste facility. A log documenting all brine or sediment removal shall be kept at the Operations & Maintenance facility at all times.

20. **Cover Evaporation Ponds.** Prior to any discharge in the evaporation ponds, the project owner shall cover the ponds with netting designed to exclude birds and other wildlife from drinking or landing on the pond surfaces. Mesh shall be 2 cm square or smaller, shall be installed to prevent sagging, and shall be a minimum of 5 feet above the surface of the water. Netting with another mesh size or a smaller distance above the water may be installed if approved by the BLM in consultation with CDFG and USFWS. The netted ponds shall be monitored regularly to verify that the netting is intact; fulfilling its function in excluding birds and other wildlife; and does not pose an entanglement threat to wildlife. Visual deterrents (e.g., flagging, reflecting tape, or hawk-shaped

kites) shall also be used in addition to netting. As appropriate, these measures shall also be applied to construction water ponds.

MM WIL-2 **Desert Tortoise Clearance Surveys, Exclusion Fencing, and Translocation.** The project owner shall avoid and minimize impacts to desert tortoises on the project site, by (1) fencing the project site to prevent tortoises from entering it during construction, O&M, or decommissioning; (2) removing all tortoises from the site prior to initiating construction; and (3) relocating or translocating tortoises to an appropriate off-site location, to be identified in a Translocation Plan. Methods for clearance surveys, fence specification and installation, tortoise handling, artificial burrow construction, egg handling, and other procedures shall be consistent with those described in the USFWS (2009) *Desert Tortoise Field Manual* (http://www.fws.gov/ventura/species_information/protocols_guidelines) or more current guidance provided by CDFG and USFWS. The project owner shall also implement all terms and conditions described in the Biological Opinion for the project, to be prepared by USFWS and all terms and conditions in an Incidental Take Permit from CDFG. Applicable conditions and requirements include, but are not limited to, the following:

1. **Desert Tortoise Translocation Plan.** The project owner shall contract a qualified biologist to prepare and implement a Desert Tortoise Translocation Plan in conformance with standards and guidelines described in Translocation of Desert Tortoises (Mojave Population) From Project Sites: Plan Development Guidance (USFWS 2010b) or more current guidance or recommendations as available from CDFG and/or USFWS, and meets the approval of the BLM, Riverside County, USFWS, and CDFG. The Plan will be provided to the Joshua Tree National Park (JTNP) for review and comment. The goal of the Plan shall be to safely exclude desert tortoises from within the project area, translocate them to appropriate locations off site, and minimize stress and potential for disease transmission. For tortoises that may be found along the gen-tie line, the Plan's goal will be to avoid impacts through construction monitoring, allowing the tortoise to leave the work area, moving it out of harm's way if required and as permitted by the Biological Opinion, and avoiding disturbance to tortoise burrows through re-siting work sites and structures. The Plan shall include all protocols for handling desert tortoises, evaluating tortoise health, translocation locations and procedures, monitoring methods for translocated tortoises, reporting, and contingency planning (e.g., handling an injured or diseased tortoise). In addition, as an alternative to translocation, the Plan will identify a strategy to remove desert tortoises on the project site from the wild and place them permanently in facilities approved by USFWS and CDFG, to be fully funded by the project owner. Suitable care or holding facilities for desert tortoises, and their capacity to accommodate desert tortoises, shall be identified. The BLM and Riverside County will not accepted the plan as "final" until it has been reviewed and approved by the USFWS and CDFG. Any modifications to the approved final Plan shall be made only with written approval by the BLM, Riverside County, USFWS, and CDFG. A copy of the approved plan will be provided to JTNP.

2. **Handling of Desert Tortoises.** Any desert tortoise located during any phase of the project shall be handled only by the Designated Biologist or Authorized Biological Monitor in accordance with the USFWS (2009) *Desert Tortoise Field Manual* and the project's Desert Tortoise Translocation Plan, and any other applicable conditions made by the USFWS or CDFG. Any time a tortoise is handled, the Designated Biologist shall record and report pertinent data, in accordance with the final Desert Tortoise Translocation Plan. Monitoring of translocated desert shall be in accordance with the Desert Tortoise Translocation Plan and USFWS (2010b) guidance.

3. **Desert Tortoise Exclusion Fence Installation.** Permanent desert tortoise exclusion fencing shall be installed around the project site. The alignments for all desert tortoise exclusion fencing shall be flagged and surveyed for desert tortoise by the Designated Biologist and Biological Monitors no more than 24 hours prior to the initiation of fence construction. The fence alignment surveys shall be conducted using techniques approved by the USFWS and CDFG and may be conducted in any season with USFWS and CDFG approval. The fence alignment clearance surveys shall provide 100 percent coverage of all areas to be disturbed and an additional buffer 90 feet wide centered on the fence alignment (i.e., 45 feet along each side of the fence line). Survey transects shall be no greater than 15 feet apart. All potential desert tortoise burrows shall be examined to assess occupancy by desert tortoises. Security fencing will be installed as near as is feasible to permanent desert tortoise exclusion fencing in order to prevent animals from being trapped between the two fences.

   a. **Timing of Fence Installation.** The exclusion fencing shall be installed prior to the pre-construction clearance surveys. No ground-disturbing activity will be permitted within the fenced area until completion of the pre-construction clearance surveys.

   b. **Fence Material and Installation.** The exclusion fencing shall be constructed in accordance with the USFWS (2009) *Desert Tortoise Field Manual* (Chapter 8 – Desert Tortoise Exclusion Fence).

   c. **Security Gates.** Security gates shall be designed with minimal ground clearance to prevent entry by tortoises. The gates should be electronically activated to open and close immediately after the vehicle(s) have entered or exited to prevent the gates from being kept open for long periods of time. Cattle grating designed to safely exclude desert tortoise may be installed at the gated entries to discourage tortoises from gaining entry (to be determined by the BLM in consultation with CDFG and USFWS).

   d. **Fence Inspections.** The exclusion fencing shall be regularly inspected during project construction and operation. If tortoises were moved out of harm's way during fence construction, fencing in that area shall be inspected at least twice daily for a minimum of 7 days after moving the animal to ensure that the recently moved tortoise has not been trapped in the fence. Thereafter, permanent fencing shall be inspected monthly and

within 24 hours following all major rains. Major rains are defined as a storm(s) for which surface flow is detectable within the fenced drainages. Any damage to the fencing shall be temporarily repaired immediately to keep tortoises from entering the site, and permanently repaired within 48 hours of observing damage. Monthly and post-rainfall inspections of permanent site fencing shall continue throughout the construction, O&M, and decommissioning of the project. Temporary fencing shall be inspected weekly and, where drainages intersect the fencing, during and within 24 hours following major rains. All temporary fencing shall be repaired immediately upon discovery of damage, and the Designated Biologist or Authorized Biological Monitor shall inspect the area to determine whether the damage may have permitted tortoise entry.

e. **Temporary Exclusion Fencing.** Any project activities during construction, O&M, or decommissioning that take place outside of the permanently fenced site within desert tortoise habitat, and have the potential to disturb native soils or vegetation, shall be subject to fencing and pre-construction clearing survey requirements, or shall take place only while a Biological Monitor is on-site. Temporary tortoise exclusion fencing may be placed on access roads or other work sites, including gen-tie line construction sites, in accordance with direction from BLM, Riverside County, USFWS, and CDFG. The fence installation shall be supervised by the Designated Biologist and monitored by the Biological Monitors to ensure the safety of any tortoise present.

4. **Desert Tortoise Clearance Surveys.** Following construction of the tortoise exclusion fencing, the fenced area (including permanent and temporarily fenced areas) shall be cleared of tortoises by the Designated Biologist and Biological Monitors. Clearance surveys shall be conducted in accordance with the USFWS 2009 *Desert Tortoise Field Manual* (Chapter 6 – Clearance Survey Protocol for the Desert Tortoise – Mojave Population) and shall consist of at least two surveys covering 100 percent of the enclosed area by walking transects no more than 15 feet apart. Surveys shall be repeated until two consecutive 100%-coverage surveys are completed without finding live tortoises. Any tortoise located during clearance surveys shall be relocated and monitored in accordance with the Desert Tortoise Translocation Plan. The fence perimeter shall also be inspected for any tortoises pacing outside the fence.

5. **Monitoring Following Clearing.** Following the desert tortoise clearance surveys, the Designated Biologist and Biological Monitors shall monitor initial clearing and grading activities to find and translocate any tortoises which may have been missed during the clearance survey. Should a tortoise be discovered, it shall be translocated as described in the Desert Tortoise Translocation Plan to an area approved by the Designated Biologist. Any time over the life of the project that a desert tortoise is found within the exclusion fencing, the Designated Biologist shall immediately contact the BLM, Riverside County, CDFG, and USFWS; monitor the tortoise's location and activities; and imple-

ment translocation of the animal in accordance with and the approved Desert Tortoise Translocation Plan and in consultation with the BLM, Riverside County, USFWS, and CDFG.

6. **Relocation of Other Special-Status Species.** Wherever feasible and safe, any special-status mammal or reptile incidentally encountered during desert tortoise clearance surveys or monitoring shall be actively or passively relocated outside the exclusion fencing.

7. **Reporting.** Methods and results of all activities described in this mitigation measure shall be reported by the Designated Biologist in the Monthly Compliance Reports. Within 30 days after completion of desert tortoise clearance surveys and translocation, the Designated Biologist shall submit a Desert Tortoise Clearance Survey, Exclusion Fencing, and Translocation Report to the BLM, Riverside County, USFWS, CDFG, and JTNP describing methods and results of the fencing, clearance surveys, and translocation (if any). The report will also document any other animals relocated during the clearance surveys.

MM WIL-3 **Nesting Bird Management Plan, Pre-Construction Nest Surveys, and Impact Avoidance Measures for Migratory and Nesting Birds.** The project owner will prepare a draft Nesting Bird Management Plan, describing measures to detect native birds that may nest on and adjacent to the project site or facilities and to avoid impacts to or take of those birds or their nests during all project phases. The draft Nesting Bird Management Plan will be submitted to the BLM for review and approval and the CDFG, USFWS, JTNP, and Riverside County for review and comment, and will be finalized by the project owner prior to issuance of BLM's Notification to Proceed. The Nesting Bird Management Plan will describe avoidance measures, such as buffer distances from active nests, based on the specific nature of project activities, noise or other disturbance of those activities, the bird species and conservation status, and other pertinent factors. The Plan will specify 330 feet as a standard buffer distance, and 500 feet for raptor species. The Plan will also identify bird species (or groups of species) that are relatively tolerant or intolerant of human activities and specify smaller or larger buffer distances as appropriate for those species. Additionally, the Plan will list all project construction activities and rank them in terms of noise and other potential disturbance to nesting birds, and specify any modifications to buffer areas as appropriate to each activity. The Plan will also identify specific measures (if any) to prevent or reduce bird nesting activity on project facilities. The Plan will include specific monitoring measures to track any active bird nest within or adjacent to the project site, bird nesting activity, project-related disturbance, and fate of each nest. The Nesting Bird Management Plan may be incorporated into the Bird and Bat Conservation Strategy (MM WIL-6) as a separate chapter. Pre-construction nest surveys for nesting birds shall be conducted prior to any construction activities that will occur during the breeding period (from February 1 through August 31). The project owner shall take measures to avoid impacts to any active bird nest within or adjacent to a work area. The Designated Biologist or Biological Monitors conducting the surveys shall be

experienced bird surveyors and familiar with standard nest-locating techniques such as those described in Martin and Guepel (1993). Surveys shall be conducted in accordance with the following guidelines. Nothing in this measure requires the project owner to conduct nesting bird surveys by entering private lands adjacent to the project site when the project owner has made reasonable attempts to obtain permission to enter the property for survey work but was unable to obtain such permission. In this situation only, the project owner may substitute binocular surveys for protocol field surveys. Burrowing owl surveys are addressed in MM WIL-4; this measure applies to other birds.

1. Surveys shall cover all potential nesting habitat within the project site or other work areas and within a 500-foot buffer of these areas;
2. At least two pre-construction surveys shall be conducted, separated by a minimum 10-day interval. The second pre-construction survey shall be conducted no more than 2-3 days prior to the start of construction activity. Additional follow-up surveys may be required if periods of construction inactivity exceed one week in any given area (an interval during which birds may establish a nesting territory and initiate egg laying and incubation);
3. If active nests are detected during the survey, the project owner will implement avoidance measures identified in the Nesting Bird Management Plan, and the Designated Biologist will be responsible for monitoring the implementation, conformance, and efficacy of those measures, according to the monitoring requirements of the Nesting Bird Management Plan.
4. A monitoring plan shall be prepared and implemented as part of the Nesting Bird Management Plan to ensure no disturbance to active nests present within or adjacent to the work area takes place; the plan shall be reviewed and approved by BLM, Riverside County, USFWS, and CDFG prior to the initiation of ground-disturbing activities;
5. Prior to the start of any project-related ground disturbance activities, the Designated Biologist shall provide the BLM, Riverside County, CDFG, USFWS, and JTNP a report or memorandum describing the findings of the pre-construction nest surveys, including the time, date, and duration of the survey; identity and qualifications of the surveyor(s); and a list of species observed. If active nests are detected during the surveys, the report shall include descriptions of avoidance zones and methods used to determine avoidance zones and maps or aerial photos identifying nest locations and the boundaries of no-disturbance buffer zones;
6. The Designated Biologist or Biological Monitor shall monitor the nest until nestlings have fledged and dispersed. Activities that might, in the opinion of the Designated Biologist, disturb nesting activities shall be prohibited within the buffer zone until such a determination is made;
7. The Designated Biologist or Biological Monitor shall monitor work areas, including active work areas, throughout the breeding season each year, throughout the construction, O&M, and decommissioning phases of the project; and

8. Throughout the construction, O&M, and decommissioning phases of the project, nest locations, project activities in the vicinity of nests, and any adjustments to buffer areas shall be described and reported in regular monitoring and compliance reports described in MM VEG-2.

MM WIL-4 **Burrowing Owl Impact Avoidance, Minimization, and Compensation Measures.** Pre-construction surveys for burrowing owls shall be conducted prior to any construction activities, at any time of year. The project owner shall take measures to avoid impacts to any active burrowing owl burrow within or adjacent to a work area. Nothing in this condition requires the project owner to conduct burrowing owl surveys by entering private lands adjacent to the project site when the project owner has made reasonable attempts to obtain permission to enter the property for survey work but was unable to obtain such permission. In this situation only, the project owner may substitute binocular surveys for protocol field surveys.

1. **Pre-Construction Surveys.** The Designated Biologist shall conduct pre-construction surveys for burrowing owls, no more than 30 days prior to the start of ground-disturbing activities in any part of the project area. Surveys shall be conducted within the project site and along all linear facilities in accordance with the most current CDFG guidelines (CDFG 2012or updated guidelines as they become available). Phase 2 surveys consistent with those guidelines may be conducted concurrently with desert tortoise clearance surveys. Burrowing owl surveys shall also be completed within all suitable habitat within 500 feet of all project disturbance areas.

2. **Avoidance Measures.** If an active burrowing owl burrow is detected within any project disturbance area, or within a 500-foot buffer of the disturbance area(s), the following avoidance and minimization measures shall be implemented:

   a. A 330-foot radius buffer zone surrounding the burrow shall be flagged, and no impacts to soils or vegetation or noise levels above 65 dBA will be permitted while the burrow remains active or occupied. Disturbance-free buffers may be modified based on site-specific conditions in consultation with the California Department of Fish and Game.

   b. Monitoring and reporting the burrowing owl burrow and surrounding activities shall be as described for active bird nests (MM WIL-3).

3. **Document Activity.** Burrowing owl burrows may only be destroyed after the Designated Biologist has determined that the burrows are no longer occupied or active.

4. **Habitat Compensation.** If known burrowing owl burrows are destroyed during the course of the project, then the project owner shall mitigate this impact by acquisition and protection of compensatory mitigation lands for burrowing owls, according to the requirements described in Mitigation Measure VEG-6 (Provide Off-Site Compensation for Impacts to Vegetation and Habitat). The project owner shall provide for the management and protection, in perpetuity, of 19.5 acres of land for each single burrowing owl or breeding pair of

burrowing owls that is displaced by construction of the project. This compensation acreage of 19.5 acres per single bird or pair of nesting owls assumes that there is no evidence that the compensation lands are occupied by burrowing owls. If burrowing owls are observed to occupy the compensation lands, then the replacement ratio will be 13.0 acres per pair or single bird. This off-site burrowing owl habitat may be "nested" within habitat acreage designated as compensation for other biological resources, so long as it provides sufficient acreage of suitable burrowing owl habitat (see MM VEG-6).

5. **Passive Relocation.** If active burrowing owl burrows are located within the project site or any work area, the project owner may contract a qualified biologist to passively relocate the owls, outside the nesting season only, by preparing and implementing a Burrowing Owl Passive Relocation Plan, as described below. No relocation of burrowing owls will be permitted during breeding season, unless the Designated Biologist determines that an occupied burrow is not occupied by a mated pair. The Plan shall include, but not be limited to, the following elements:

   a. **Assessment of Suitable Burrow Availability.** The Plan shall include an inventory the availability of existing, suitable, and unoccupied burrow sites within 100 meters (330 feet) of the project area or work site. Suitable burrows will include inactive desert kit fox, ground squirrel, or desert tortoise burrows that are deep enough to provide suitable burrowing owl nesting sites (as determined by the Designated Biologist or other biologist authorized by the Resource Agencies and BLM). If two or more suitable and unoccupied burrows are present in the area for each burrowing owl that will be passively relocated, then no replacement burrows will need to be built.

   b. **Replacement Burrows.** For each burrowing owl that will be passively relocated, if fewer than two suitable unoccupied burrows are available in the area, then the project owner shall construct at least two replacement burrows within or near the project area. Burrow replacement sites shall be in areas of suitable habitat for burrowing owl nesting, and be characterized by minimal human disturbance and access. Relative cover of non-native plants within the proposed relocation sites shall not exceed the relative cover of non-native plants in the adjacent habitats; and the Plan shall describe measures to ensure that burrow installation or improvements would not affect sensitive species habitat or any burrowing owls already present in the relocation area. The Plan shall provide guidelines for creation or enhancement of at least two natural or artificial burrows for each active burrow within the project disturbance area, including a discussion of timing of burrow improvements, specific location of burrow installation, and burrow design. Design of the artificial burrows shall be consistent with CDFG guidelines (CDFG 2012 or more current guidance as it becomes available) and shall be approved by the BLM, Riverside County, CDFG, and USFWS.

c. **Methods.** Provide detailed methods and guidance for passive relocation of burrowing owls, outside the breeding season. Occupied burrows may not be disturbed during the nesting season (February 1 to August 31) to avoid "take" under the MBTA and Fish and Game codes, unless the Designated Biologist determines it is not occupied by a mated pair.

d. **Monitoring and Reporting.** Describe monitoring and management of the replacement burrow site(s), and provide a reporting plan. The objective shall be to manage the relocation area for the benefit of burrowing owls, with the specific goal of maintaining the functionality of the burrows for a minimum of two years.

MM WIL-5 **Golden Eagle Pre-construction and Construction Phase Surveys.** The project owner shall implement the following measures to document golden eagle occurrence in the project area and surrounding mountains. Survey schedule and requirements will be as identified below unless otherwise authorized by the BLM in consultation with the USFWS and CDFG.

1. **Annual Winter and Nesting Season Surveys.** Beginning in winter 2011-12, and continuing throughout the construction phase of the project, the project owner shall contract with a qualified ornithologist to conduct winter season and nesting season surveys of golden eagle habitat use in Chuckwalla Valley and surrounding mountains within a 10-mile radius of the project site and gen-tie alignment. Nesting season surveys will determine occupancy, productivity, and chronology of known or newly discovered nesting territories within the 10-mile radius. Survey methods for the inventory shall be either ground-based or helicopter-based, as described in the *Golden Eagle Technical Guidance* (Pagel et al. 2010) or more current guidance from the USFWS. Winter surveys will evaluate golden eagle occurrence and habitat use within the 10-mile radius during winter.

2. **Winter Season Survey Data.** Data collected during winter season surveys shall include dates, times, locations, observation minutes, nest status, and weather conditions during field surveys; panoramic photographs from the survey locations, indicating areas viewed; and compilations of all golden eagle and other raptor observations for each survey date.

3. **Nesting Season Inventory Data.** Data collected during the nesting season surveys shall include at least the following: territory status (unknown, vacant, occupied, breeding successful, breeding unsuccessful); nest location, nest elevation; age class of golden eagles observed; nesting chronology; number of young at each visit; photographs; and substrate upon which nest is placed.

4. **Determination of Unoccupied Territory Status.** A nesting territory or inventoried habitat shall be considered unoccupied by golden eagles only after completing at least two full surveys in a single breeding season.

5. **Monitoring and Adaptive Management Plan.** If an occupied nest (as defined by Pagel et al. 2010) is detected within 10 miles of the project site or gen-tie line alignment, the project owner shall contract a qualified biologist to

prepare and implement a Golden Eagle Monitoring and Management Plan for the duration of construction to ensure that project construction activities do not result in injury or disturbance to golden eagles. The monitoring methods shall be consistent with those described in the *Golden Eagle Technical Guidance* (Pagel et al. 2010) or more current guidance from the USFWS. The Monitoring and Management Plan shall be implemented upon its approval by BLM, in consultation with USFWS, Riverside County, and CDFG. A copy shall be provided to JTNP for review and comment. Triggers for adaptive management shall include any evidence of project-related disturbance to nesting golden eagles, including but not limited to: agitation behavior (displacement, avoidance, and defense); increased vigilance behavior at nest sites; changes in foraging and feeding behavior, or nest site abandonment. The Monitoring and Management Plan shall include a description of adaptive management actions, to include, but not be limited to, cessation of construction activities that are deemed by the Designated Biologist to be the source of golden eagle disturbance.

6. **Reporting.** Golden eagle survey data and, if applicable, nest activity monitoring results and any adaptive management actions taken, will be provided to BLM, Riverside County, CDFG, USFWS, and JTNP in monthly monitoring reports, as seasonal data becomes available and if specific nest monitoring or any adaptive management actions are taken, and summarized in annual project monitoring reports.

MM WIL-6 **Bird and Bat Conservation Plan.** The project owner shall contract a qualified biologist to prepare and implement a Bird and Bat Conservation Plan (formerly titled Avian and Bat Protection Plan) in consultation with the USFWS. The objective of the Bird and Bat Conservation Plan will be to minimize death, injury, or other adverse effects to birds or bats, including potential for take of golden eagles, from project disturbance or from collisions with facility features including power plant structures, gen-tie lines or towers, evaporation ponds, and other facilities. The Plan will provide:

- A summary of Avian Point Count data (and raw data sheets from bird surveys);
- All available biological information about golden eagles that breed, feed, shelter and/or migrate in a 10-mile buffer of the project site;
- A detailed description of ongoing and future golden eagle surveying, nest activity monitoring, and monitoring plan (see MM WIL-5);
- A cumulative effects analysis of regional impacts to golden eagle foraging habitat;
- An assessment of the project's potential risks to birds and bats.

The Bird and Bat Conservation Plan shall conform to the recommendations of the USFWS (2010c) or more current guidelines if available. It shall describe all project facilities that have the potential to affect birds or bats (including collisions or effects of polarized light from the solar panels); describe all design and operational features incorporated to minimize potential effects, and identify additional

adaptive management measures to be implemented as needed (e.g., visual screening on the perimeter fence to minimize bird and bat access into the facility; modifications such as netting or shielding to exclude nesting birds from facilities; seasonal modifications to panel washing, maintenance or inspection schedules to prevent damage to bird nests, or deterrents to prevent birds or bats from accessing facilities). In addition, if the O&M facility is developed off-site, a monopole structure will be used to support telecommunications equipment in order to deter bird nesting and use by ravens. The Plan also shall provide a reporting schedule for all actions taken during project construction, O&M, and decommissioning. The Plan will be subject to approval by the USFWS, in consultation with BLM, Riverside County, CDFG, and JTNP.

MM WIL-7 **American Badger and Desert Kit Fox Protection.** To avoid direct impacts to American badgers and desert kit foxes, the project owner shall implement the following measures:

1. ***Baseline Kit Fox Census and Population Health Survey:*** A qualified biologist with demonstrated mammal experience shall complete a baseline study of desert kit fox populations on the Project site and the anticipated dispersal areas for passive relocation at least 60 days prior to initiation of construction activities. The anticipated dispersal areas shall be defines as all suitable desert kit fox habitat within [insert distance from project boundaries]. The study shall characterize the demographics (e.g., size, structure, and distribution) of the kit foxes on the site and anticipated dispersal areas. The baseline study shall include the following components:

    a. An inventory and mapped locations of desert kit fox burrows on the project site and in the anticipated dispersal areas, and an evaluation whether each burrow is occupied, and reproductive status of kit foxes (single animal, mated pair, or family group with young). See Pre-Construction Surveys below.

    b. Health screening of each animal to determine exposure to canine distemper virus or other conditions, as recommended by federal or State wildlife health officials [e.g., the CDFG Wildlife Investigations Lab (WIL)]. All capturing or handling of desert kit foxes shall be under the immediate supervision of WIL staff. The project owner will coordinate with and fund the health studies to establish baseline health conditions.

    c. Reporting: The project owner shall provide a draft Summary Report of the Baseline Kit Fox Census and Population Health Survey to BLM for review in consultation with CDFG and USFWS. The project owner shall not implement the Desert Kit Fox Management Plan (below) until receiving BLM's written approval of the Summary Report.

2. ***Prepare Desert Kit Fox Management Plan*:** At least 45 days prior to construction, the project owner shall submit a draft Desert Kit Fox Management Plan to BLM for review and approval in consultation with CDFG and USFWS. The Desert Kit Fox Management Plan shall 1) incorporate baseline desert kit fox census and health survey findings into a cohesive management

strategy that minimizes disease risk to kit foxes; 2) specifies a cost and funding mechanism (e.g., NFWF Account) to fund CDFG for tagging, radio-tracking and monitoring of a subset of displaced kit foxes during the entire project construction phase to understand how displacement affects regional kit fox populations; 3) specifically identifies preconstruction survey methods for kit foxes and large carnivores (e.g., badgers) in the Project area; 4) describes a specific protocol for evaluating occupancy or activity of desert kit fox or American badger at each burrow or den; 5) describes preconstruction and construction-phase passive relocation methods from the site, and; 6) coordinates survey findings prior to and during construction to meet the information needs of wildlife health officials in monitoring the health of kit foxes on the site and in surrounding anticipated dispersal areas; 8) specify communications and reporting protocols for plan implementation, all observations of injured, ill, or dead kit foxes or badgers, and handling protocols for kit fox or badger carcasses; 9) Reporting. Specify dates and contents of all implementation reports, who they will be submitted to, and any required review/approval process. The Plan shall include contingency measures to be performed if canine distemper is documented in the Project area or anticipated dispersal areas adjacent to the project site, and measures to address potential kit fox reoccupancy of the site (as documented at the Genesis site). The contents and requirements of the Plan shall be subject to review and approval by the BLM and CDFG. The project owner shall not implement the Desert Kit Fox Management Plan (below) until receiving BLM's written approval of the Summary Report.

3. ***Implement Desert Kit Fox Management Plan:*** If canine distemper is not identified in the Project area or relocation areas during baseline surveys, the mitigation strategy may utilize passive means with appropriate CDFG authorization to relocate kit foxes from the site. The approach below assumes that canine distemper is not detected during baseline surveys. If canine distemper is detected among desert kit foxes on the site or surrounding areas, then the project owner shall implement the following.

   a. *Pre-Construction Surveys:* Biological Monitors shall conduct pre-construction surveys for desert kit fox and American badger no more than 30 days prior to initiation of construction activities. Surveys shall identify and record the locations of all suitable dens throughout the project site (or phase or component, as applicable) and within 100 feet of the project boundary (including utility corridors and access roads) and shall be performed for each phase of construction. If dens are detected each den shall then be further classified as inactive, potentially active, or definitely active, as follows:

   b. An initial survey will note and record locations of all potential dens. Each den will be evaluated for potential desert kit fox or American badger occupancy or activity (above).

c. Inactive dens (as determined by the monitoring protocol above) that would be directly impacted by construction activities shall be excavated by hand and backfilled to prevent reuse by badgers or kit fox.

d. Potentially and definitely active dens that would be directly impacted by construction activities shall be monitored by the Biological Monitor for three consecutive nights using a tracking medium (such as diatomaceous earth or fire clay) and/or infrared camera stations at the entrance.

e. If no tracks are observed in the tracking medium or no photos of the target species are captured after three nights, the den shall be excavated and backfilled by hand.

f. If tracks are observed, the den shall be progressively blocked with natural materials (rocks, dirt, sticks, and vegetation piled in front of the entrance) for the next three to five nights to discourage the badger or kit fox from continued use. After verification that the den is unoccupied it shall then be excavated and backfilled by hand to ensure that no badgers or kit fox are trapped in the den. BLM approval may be required prior to release of badgers on public lands.

g. Active natal or pupping dens (any den with pups) will not be excavated or passively relocated. The pupping season is generally from January 15 through July 31. A 500-foot no-disturbance buffer shall be maintained around all active dens.

h. The following measures shall be taken to reduce the likelihood of distemper transmission:

   i. No pets shall be allowed on the site prior to or during construction [what about operation or decommissioning?], with the possible exception of vaccinated kit fox scat detection dogs during preconstruction surveys, and then only with prior CDFG approval;

   ii. Any hazing activities that include the use of chemical or other repellents (e.g. ultrasonic noise makers, or non animal-based chemical repellents) must be cleared through CDFG prior to use. The use of animal tissue or excretion based repellents (e.g. coyote urine, anal gland products) is not permitted.

   iii. Any sick or diseased kit fox, or documented kit fox mortality shall be reported to CDFG and the BLM AO within 8 hours of identification. If a dead kit fox is observed, it shall be collected and stored according to established protocols distributed by CDFG WIL, and the WIL contacted to determine carcass suitability for necropsy.

MM WIL-8 **Raven Monitoring, Management, and Control Plan.** The project owner shall contract a qualified biologist to prepare and implement a Raven Monitoring, Management, and Control Plan (Raven Plan) that shall be consistent with current USFWS raven management guidelines and that meets the approval of the BLM, Riverside County, USFWS, and CDFG. The purpose of the Raven Plan shall be

to minimize project-related predator subsidies and prevent any increases in raven numbers or activity during construction, O&M, and decommissioning. The Plan shall address all project components and their potential effects on raven numbers and activity. The threshold for implementation of raven control measures shall be any increases in raven numbers from baseline conditions, as detected by monitoring to be implemented pursuant to the Plan. Regardless of raven monitoring results, the project owner shall be responsible for all other aspects of raven management described in the Plan, including avoidance and minimization of project-related trash, water sources, or perch/roost/nest sites that could contribute to increased raven numbers, throughout the life of the project, including construction, O&M, and decommissioning. In addition, to offset the cumulative contributions of the project to desert tortoise from increased raven numbers, the project owner shall contribute to the USFWS Regional Raven Management Program. The project owner shall do all of the following:

1. **Prepare and Implement a Raven Management Plan** that shall include, but shall not be limited to the following components. The Plan shall be finalized and approved by BLM, Riverside County, USFWS, and CDFG and provided to the JTNP for review and comment prior to the start of construction activities.

    a. Identify all potential project activities, structures, components, and other effects that could provide predator subsidies or attractants, including potential sources of food and water, as well as nest or perch sites. These will include but will not be limited to waste food material, road killed animals, water storage (including evaporation ponds and construction phase storage ponds), potential pooling from leaks, dust control, or waste water, and perch or roost sites on project facilities and infrastructure;

    b. Describe management practices to avoid or minimize conditions that might increase raven numbers and predatory activities;

    c. Specify a program to monitor raven presence in the project vicinity and detect any increase in numbers or activity;

    d. Specify raven activity thresholds for implementation of control measures;

    e. Describe control practices for ravens to be implemented as needed based on the monitoring results;

    f. Address monitoring and nest removal during construction and for the life of the project; and

    g. Describe reporting schedules and requirements. For the first year of reporting, the project owner shall provide quarterly reports describing implementation of the Plan, thereafter the reports shall be submitted annually for the life of the project.

2. **Contribute to the USFWS Regional Raven Management Program.** No later than 30 days prior to the start of construction, the project owner shall submit payment to the project sub-account of the REAT Account held by the National Fish and Wildlife Foundation (NFWF) to support the USFWS Regional Raven

Management Program. The amount shall be a one-time payment of $105 per acre of long-term or permanent disturbance (totaling $136,500 for a disturbance area of 1,300 acres, to be adjusted according to final project footprint).

Residual Impacts and Unavoidable Adverse Effects

Some of the mitigation measures presented in this section and in Section 4.3 would mitigate adverse impacts to wildlife resources by minimizing or preventing the impacts from occurring. For example, MM WIL-1 (Wildlife Impact Avoidance and Minimization) would minimize adverse impacts to wildlife, to the extent feasible through measures such as limiting disturbance areas and fencing, maintain a 15 miles-per-hour speed limit on access roads, requiring monitoring during all soil and vegetation disturbance, avoiding toxic soil binders, minimizing lighting, maintaining noise levels below 65 dBA during the bird nesting season, minimizing dust, and avoiding entrapment of wildlife; and MM WIL-3 (Pre-Construction Nest Surveys and Impact Avoidance Measures for Migratory and Nesting Birds) would avoid or prevent destruction of active birds' nests, including eggs and nestling birds. Other mitigation measures would offset project impacts. MM VEG-6 (Provide Off-Site Compensation for Impacts to Vegetation and Habitat) requires acquisition and management of off-site vegetation and habitat in perpetuity to offset the permanent loss of vegetation and habitat on the project site. This measure, although compensating for impacts to wildlife habitat, would not prevent those impacts from occurring.

With the implementation of mitigation measures described in Section 4.3 and MM WIL-1 through MM WIL-8, the residual impacts to wildlife resources would be

1. the net loss of habitat on the project site for the duration of project O&M and for some period after ultimate site restoration after decommissioning;
2. the mortality of small mammals, reptiles, or other species unable to escape the site during initial site clearing and preparation;
3. the fragmentation and impaired connectivity of wildlife habitat in the upper Chuckwalla Valley over the life of the project;
4. the effects of noise, lighting, dust, and other disturbances to adjacent off-site habitat during construction, O&M, and decommissioning;
5. effects to displaced wildlife (finding and establishing new home ranges, intra- and/or interspecific competition for food and other resources, etc.); and
6. the potential, but unquantified loss of birds during project O&M.

These impacts are described above under direct and indirect impacts of project construction and operation.

4.4.8 Alternative 5 – Solar Project Excluding WHMA

Alternative 5 would have the same project boundaries as Alternative 4, except that it would exclude the portion of the site which is within the Palen-Ford WHMA, as shown on Figure 2-9, Alternative 5: Solar Project Excluding WHMA, in Appendix A. Alternative 5 would encompass 1,161 acres. It would not incorporate any substantial changes to construction, O&M, or decommissioning from those described for Alternative 4.

Construction

Direct and indirect effects to wildlife resources during construction of Alternative 5 would be as described in Section 4.4.7 with respect to the construction of Alternative 4, except that the acreage of impacts would be reduced by 47 acres, from 1,208 to 1,161 (see Table 4.4-1), and there would be no direct impacts to the Palen-Ford WHMA.

Operation and Maintenance

Direct and indirect effects to wildlife resources during O&M of Alternative 5 would be as described in Section 4.4.7 for the indirect O&M effects of Alternative 4.

Decommissioning

Direct and indirect effects to wildlife resources during decommissioning of Alternative 5 would be as described in Section 4.4.7 for the indirect decommissioning effects of Alternative 4.

Mitigation Measures

Mitigation measures to reduce or minimize impacts of Alternative 5 to wildlife resources are the same as those required in Section 4.4.7 for Alternative 4.

Residual Impacts and Unavoidable Adverse Effects

Residual effects of Alternative 5 to wildlife resources would be as described in Section 4.4.7 for the residual effects of Alternative 4, except that the acreage of impacts to habitat would be reduced by 47 acres, from 1,208 to 1,161 (see Table 4.3-1).

4.4.9 Alternative 6 – Reduced Footprint Solar Project

Alternative 6 would have the same project boundaries as Alternative 4, except that it would exclude the 155-acre southern parcel of the project, as shown on Figure 2-10, Alternative 6: Reduced Footprint Solar Project, in Appendix A. Alternative 6 would encompass 1,044 acres. Because Alternative 6 would not require use of two separate parcels of land, the alternative would not require an underground electrical connection across the wash that separates the southwestern and northeastern parcels under Alternative 4. It would not, however, incorporate any other substantial changes to construction, O&M, or decommissioning from those described for Alternative 4.

Construction

Direct Effects

Direct and indirect effects to wildlife resources during construction of Alternative 6 would be as described in Section 4.4.7 with respect to the construction of Alternative 4, except that the acreage of impacts would be reduced by 164 acres, from 1,208 to 1,044 (see Table 4.3-1) and direct impacts to Blue Palo Verde–Ironwood Woodland (Desert Dry Wash Woodland) habitat would be substantially reduced, from 180 to 98 acres (a 46 percent [46%] reduction in impacts). The Blue Palo Verde–Ironwood Woodland (Desert Dry Wash Woodland) is a special-status plant community; it provides habitat elements and structure not available in surrounding Creosote

Bush Scrub (Sonoran Desert Scrub), and it may serve as habitat for several special-status species, as discussed above.

Operation and Maintenance

Direct and indirect effects to wildlife resources during O&M of Alternative 6 would be as described in Section 4.4.7 for the indirect O&M effects of Alternative 4.

Decommissioning

Direct and indirect effects to wildlife resources during decommissioning of Alternative 6 would be as described in Section 4.4.7 for the indirect decommissioning effects of Alternative 4.

Mitigation Measures

Mitigation measures to reduce or minimize impacts of Alternative 6 to wildlife resources are the same as those required in Section 4.4.7 for Alternative 4.

Residual Impacts and Unavoidable Adverse Effects

Residual effects of Alternative 6 to wildlife resources would be as described in Section 4.4.7 for the residual effects of Alternative 4, except that the acreage of impacts to habitat would be reduced by 164 acres, from 1,208 to 1,044 (see Table 4.3-1).

4.4.10 Alternative 7 – High-Profile Reduced Footprint Solar Project

Alternative 7 would be constructed within the same project boundaries as Alternative 6. Alternative 7 would encompass an estimated 1,044 acres and would be an estimated 150 MW nominal capacity project. Project details are the same as for Alternative 4, with the only exception being the overall height of the panels for Alternative 7. Alternative 7 would use high-profile single-axis tracking panels that would have a total height of 15 feet. Because Alternative 7 would not require use of two separate parcels of land, the alternative would not require an underground electrical connection across the wash that separates the southwestern and northeastern parcels under Alternative 4. It would not, however, incorporate any other substantial changes to construction, O&M, or decommissioning from those described for Alternative 4.

Construction

Direct Effects

Direct and indirect effects to wildlife resources during construction of Alternative 7 would be as described in Section 4.4.7 with respect to the construction of Alternative 4, except that the acreage of impacts would be reduced by 164 acres, from 1,208 to 1,044 (see Table 4.3-1) and direct impacts to Blue Palo Verde–Ironwood Woodland (Desert Dry Wash Woodland) habitat would be substantially reduced, from 180 to 98 acres (a 46 percent [46%] reduction in impacts). The Blue Palo Verde–Ironwood Woodland (Desert Dry Wash Woodland) is a special-status plant community; it provides habitat elements and structure not available in surrounding Creosote Bush Scrub (Sonoran Desert Scrub), and it may serve as habitat for several special-status species, as discussed above.

Operation and Maintenance

Direct and indirect effects to wildlife resources during O&M of Alternative 7 would be as described in Section 4.4.7 for the indirect O&M effects of Alternative 4.

Decommissioning

Direct and indirect effects to wildlife resources during decommissioning of Alternative 7 would be as described in Section 4.4.7 for the indirect decommissioning effects of Alternative 4.

Mitigation Measures

Mitigation measures to reduce or minimize impacts of Alternative 6 to wildlife resources are the same as those required in Section 4.4.7 for Alternative 4.

Residual Impacts and Unavoidable Adverse Effects

Residual effects of Alternative 7 to wildlife resources would be as described in Section 4.4.7 for the residual effects of Alternative 4, except that the acreage of impacts to habitat would be reduced by 164 acres, from 1,208 to 1,044 (see Table 4.3-1).

4.4.11 Alternative A – No Gen-Tie

This No Action Alternative under NEPA defines the scenario that would exist if the proposed gen-tie line were not constructed and no plan amendment was issued. If this No Action Alternative were selected, the impacts of project construction, operation, decommissioning; as well as cumulative impacts associated with the gen-tie line would not occur. There would be no project-related disturbance of the ground at the tower locations and pull sites, no disturbance of desert vegetation and habitat, and no installation of transmission equipment.

4.4.12 Alternative B – Proposed Gen-Tie (Shared Towers)

Alternative B is the Applicant's proposed gen-tie line, which would utilize transmission infrastructure to be developed for the adjacent Desert Sunlight project by sharing the approved transmission ROW and the gen-tie towers (see Figure 2-11 in Appendix A). At the time of commencement of analysis for this EIS in September 2011, the approved Desert Sunlight gen-tie has not yet been constructed; therefore, the effects of constructing, operating, and decommissioning gen-tie Alternative B are analyzed here without the presumption that the approved Desert Sunlight gen-tie would be built. Please see the Cumulative Impacts section, below, for a separate analysis of the cumulative impacts of gen-tie line Alternative B and the approved Desert Sunlight gen-tie. Implementation of Alternative B, as it is described and analyzed here, would require independent construction, operation, and decommissioning of this transmission line.

Construction

Project construction, including construction methods, equipment, scheduling, and phasing, are described in Chapter 2. Construction of Alternative B would directly and indirectly affect wildlife and wildlife habitat. These effects, and mitigation measures to reduce the severity of these effects, are discussed below.

Direct Effects

Most direct effects of Alternative B construction to wildlife would be qualitatively similar to the construction effects described for Alternative 4 (Section 4.4.7), but smaller in scale and scope. Longer-term effects to wildlife movement would relatively minor, due to the wide spacing of project components (tower structures) and short-term nature of construction. These effects would be mitigated through implementation of the mitigation measures defined in this section.

Wildlife Habitat. The direct impacts to wildlife habitat would be the permanent and long-term loss of 92 acres of natural vegetation, including 41 acres of Creosote Bush Scrub (Sonoran Desert Scrub) and 51 acres of Blue Palo Verde–Ironwood Woodland (Desert Dry Wash Woodland). Following construction, remaining impacted and restored vegetation and habitat would be unsuitable for many species, particularly species with specific habitat requirements, including most special-status wildlife species. This is because of the long time periods required for recovery of vegetation in desert ecosystems. Therefore, much of the temporarily-impacted areas will remain in a degraded state for much if not all of the life of the project, even after revegetation. However, vegetation and habitat conditions following construction would likely remain suitable for relatively common species, such as side-blotched lizard, house finch, northern mockingbird, and desert cottontail, which are habitat generalists capable of utilizing a wide range of vegetation types. Alternative B's direct impacts to wildlife habitat can be reduced or offset through implementation of Mitigation Measures VEG-1 through MM VEG-6. These measures would require biological monitoring during construction activities, implementation of a Worker Environmental Awareness Program, minimization of disturbance areas, vegetation management or revegetation of disturbed areas within the project footprint (as compatible with project operation and maintenance), and off-site compensation for permanent loss of vegetation and habitat.

Wildlife Mortality. Construction could cause mortality of mammals and reptiles from trampling or crushing during clearing, grading, or excavation. Potential mortality to native birds and nestlings is discussed below. Mitigation Measure WIL-1 (Wildlife Impact Avoidance and Minimization) would reduce wildlife mortality through a variety of strategies, including speed limits and other measures to minimize road strikes, and pre-construction surveys and salvage measures to relocate animals during initial clearing and grading, as practicable.

Noise and Lighting Impacts to Wildlife. Noise and lighting during gen-tie line construction would affect wildlife in adjacent habitats, as described in Section 4.4.7. Mitigation Measure WIL-1 (Wildlife Impact Avoidance and Minimization) would minimize the impacts of noise and lighting by preventing lighting from being directed away from work areas, and scheduling noisy construction activities outside the most sensitive season.

Desert Tortoise. Desert tortoises have been documented on and near the southern portions of the gen-tie line alignment and tortoises could be found at any time at any location along the alignment. Gen-tie line construction would take suitable and occupied desert tortoise habitat, and has the potential to kill or injure tortoises that may be active at work sites, or within burrows located at work sites, as described in Section 4.4.7. These impacts can be avoid, reduced, or offset through implementation of Mitigation Measures presented in Sections 4.3.7 and 4.4.7, including Mitigation Measures VEG-1 through MM VEG-6, MM WIL-1, and MM WIL-2. Desert tortoises found on work sites during gen-tie clearance surveys or construction activities would be moved from harm's way as appropriate, but would not be translocated farther than necessary. Portions of gen-tie alignment Alternative B are within designated desert tortoise

Critical Habitat and the Chuckwalla DWMA. Impacts to these specially designated wildlife management areas are described below, and would be compensated at a 5:1 ratio (per MM VEG-6).

Special-Status Reptiles and Amphibians. Based on habitat and geographic range, desert tortoise and rosy boa are the only special-status reptile or amphibian species with a moderate or greater probability of occurring along the Alternative B alignment (Section 3.4). Project impacts and mitigation for desert tortoises would be the same as those described for Alternative 4. Habitat on the gen-tie alignment is only marginally suitable for rosy boa due to the relatively flat topography and lack of boulders or rock crevices where they typically take cover. However, the site is within their geographic range and could be occupied at low density. Project impacts to rosy boa could include mortality or injury to snakes, and the loss of habitat. These impacts can be reduced or offset through implementation of Mitigation Measures VEG-1 through MM VEG-6 (Section 4.3.7) and MM WIL-1 (Wildlife Impact Avoidance and Minimization).

Native Birds. The gen-tie alignment and surrounding area provides suitable nesting habitat for numerous resident and migratory bird species. Potential impacts to native birds, including their nests, eggs, and nestlings are described in Section 4.4.7. Construction impacts of the gen-tie line can be reduced or offset through implementation of Mitigation Measures VEG-1 through MM VEG-6 (Section 4.3.7), MM WIL-1 (Wildlife Impact Avoidance and Minimization), and MM WIL-3 (Pre-Construction Nest Surveys and Impact Avoidance Measures for Migratory Birds). Some bird species will likely nest at gen-tie construction sites during construction, even after initial grading and clearing. MM WIL-3 requires regular monitoring of work areas throughout the breeding season. In some cases, it may be necessary to reduce buffer areas or to remove or relocate a bird nest in coordination with the resource agencies to proceed safely with construction.

Burrowing Owl. Burrowing owls are uncommon in the area, but could occupy the gen-tie alignment in low numbers. Potential direct project impacts to burrowing owls would be similar to those described for nesting birds, but also could destroy occupied burrows or cause the owls to abandon burrows, during any season. If owls were present, construction during the breeding season could cause nest abandonment and the incidental loss of eggs or nestlings. These impacts can be mitigated through implementation of Mitigation Measures VEG-1 through MM VEG-6 (Section 4.3.7), MM WIL-1 (Wildlife Impact Avoidance and Minimization), MM WIL-3 (Pre-Construction Nest Surveys and Impact Avoidance Measures for Migratory Birds), and MM WIL-4 (Burrowing Owl Impact Avoidance, Minimization, and Compensation Measures).

Golden Eagle. The gen-tie alignment does not provide suitable golden eagle nesting habitat. However, the entire alignment is suitable foraging habitat, and is within several miles of golden eagle nesting territories located in the Eagle Mountains, Coxcomb Mountains, and Chuckwalla Mountains (see Section 3.4). Impacts of gen-tie construction to golden eagle foraging habitat would be qualitatively similar, but lesser in scale and magnitude, to those described for Alternative 4 in Section 4.4.7. However, permanent loss of habitat would total 92 acres over the 12.1-mile long alignment and would occur in small, discrete areas such as individual tower sites. Therefore, loss of foraging habitat would not be considered a substantial adverse impact for Alternative B.

Impacts to golden eagle foraging habitat can be offset through Mitigation Measure VEG-6 (Provide Off-Site Compensation for Impacts to Vegetation and Habitat). Additionally, Mitigation

Measure WIL-5 (Golden Eagle Pre-construction and Construction Phase Surveys) would require annual monitoring during nesting season, and requires the project owner to prepare and implement an adaptive management plan if golden eagles are found nesting in the area at any time during project construction. Mitigation Measure WIL-6 (Bird and Bat Conservation Plan) would require the project owner to prepare and implement an overall strategy to avoid, minimize, or mitigate project impacts to birds and bats, including golden eagles, in consultation with the USFWS.

Infrastructure and construction equipment could cause collision or electrocution hazards to golden eagles and other birds during project construction. These construction phase hazards would be less important than similar collision and electrocution hazards that could occur during O&M of the gen-tie line, discussed below.

Other Special-Status Raptors. Several other special-status raptors have been reported on or near the project site, or are likely to occur in the area, at least during limited times of year (Section 4.4.7). Impacts to raptor foraging habitat can be offset through Mitigation Measure VEG-6 (Provide Off-Site Compensation for Impacts to Vegetation and Habitat.

Gila Woodpecker and Special-Status Passerines. The desert vegetation and adjacent mountains provide foraging, cover, or breeding habitat for resident and migratory birds, described in Section 4.4.7. Potential gen-tie line construction impacts to these species would be as described above for nesting birds. These impacts can be mitigated through implementation of Mitigation Measures VEG-1 through MM VEG-6 (described in Section 4.3.7), MM WIL-1 (Wildlife Impact Avoidance and Minimization), and MM WIL-3 (Pre-Construction Nest Surveys and Impact Avoidance Measures for Migratory Birds).

Special-Status Bats. Several special-status bats could use the gen-tie alignment for foraging, but no suitable roosting habitat is available on-site for these species. Construction of Alternative B could impact special-status bats through the elimination of desert shrubland foraging habitat, particularly the Blue Palo Verde–Ironwood Woodland (Desert Dry Wash Woodland) habitat. Mitigation Measure WIL-6 (Bird and Bat Conservation Plan) would require the project owner to prepare and implement an overall strategy to avoid, minimize, or mitigate project impacts to birds and bats, in consultation with the USFWS.

Palm Springs Round-Tailed Ground Squirrel. Project construction would eliminate marginally suitable habitat for Palm Springs round-tailed ground squirrel along the gen-tie line alignment, but would not affect aeolian sands and mesquite hummocks that characterize its primary habitat. Direct effects of project construction would include the effects described in Section 4.4.7 for wildlife (habitat loss, mortality, and disturbance by noise and lighting). Implementation of Mitigation Measures VEG-1 through MM VEG-6 (Section 4.3.7) and MM WIL-1 (Wildlife Impact Avoidance and Minimization) would minimize or offset these impacts.

American Badger and Desert Kit Fox. Potential direct impacts to American badger and desert kit fox include mechanical crushing of individuals or burrows by vehicles and construction equipment, noise, dust, and loss of habitat. Implementation of Mitigation Measures VEG-1 through MM VEG-6 (Section 4.3.7) and MM WIL-1 (Wildlife Impact Avoidance and Minimization) would minimize or offset these impacts. In addition, MM WIL-7 (Desert Kit Fox and American Badger Impact Avoidance) would require the project owner to passively relocate desert kit fox or American badgers found at work sites, if needed.

Nelson's Bighorn Sheep, Burro Deer, and Yuma Mountain Lion. Habitat along the gen-tie line is primarily of marginal quality for Nelson's bighorn sheep, burro deer, and Yuma mountain lion. In addition, the scale of habitat loss would be relatively minor, as it would encompass 92 acres spread out over 12.1 miles. Impacts would be in small, discrete areas and would not present a substantial adverse impact in the form of loss of foraging habitat or interference with movement. The extent of marginally suitable habitat loss for Nelson's bighorn sheep, burro deer, and Yuma mountain lion would be relatively unimportant to movement. Loss of habitat on the gen-tie alignment, and expected off-site impacts such as noise, lighting, and disturbance would be minimized or offset through implementation of Mitigation Measures VEG-1 through MM VEG-6 (Section 4.3.7) and MM WIL-1 (Wildlife Impact Avoidance and Minimization).

Wildlife Movement. Gen-tie line construction would only affect wildlife movement in the area to a minimal and temporary extent at each work site. Impacts would include avoidance of the work area by wildlife during active construction, and disturbance from noise and light. However, due to the intermittent locations of construction activity and its temporary nature, wildlife would not be physically prevented from moving around project equipment in the gen-tie corridor. Impacts to wildlife movement would be offset through implementation of Mitigation Measure VEG-6 (Provide Off-Site Compensation for Impacts to Vegetation and Habitat), which requires habitat compensation at a 1:1 ratio to contribute to general wildlife movement and population connectivity for Nelson's bighorn sheep and desert tortoise populations.

Wildlife Management Areas. The gen-tie alignment Alternative B would be sited adjacent to the boundary of the Chuckwalla DWMA along Kaiser Road, but would not be within the DWMA in this area. It would traverse portions of the Chuckwalla CHU, and areas of overlap between the Chuckwalla DWMA and the Chuckwalla CHU at the southern end of the alignment. It would impact an estimated 34.2 acres of the CHU and 1.5 acres of DWMA/CHU overlap area, for a total of 35.7 acres of impacts to wildlife management areas and CHU. Alternative B would not be located within or near the Palen-Ford WHMA (see Table 4.4-2 and Figure 3.4-1 in Appendix A). Construction activities would directly impact wildlife utilizing these protected areas as described for Alternative 4. Implementation of mitigation measures would reduce or offset direct impacts to wildlife management areas.

Indirect Effects

Gen-tie line construction could have several indirect impacts to wildlife and its habitat, including introduction or spread of invasive weeds, displaced wildlife, and increased predation due to predator "subsidies" provided during construction. The indirect effects to wildlife of invasive weeds, and mitigation of those effects, are as described in Section 4.3.

Wildlife Displacement. Construction activities would cause most mobile vertebrate wildlife to leave the site, or attempt to leave, with the effects as described in Section 4.4.7. On the gen-tie alignment, most of these effects would be relatively short-term, and most species would be able to re-occupy the sites, or immediately adjacent habitat, upon completion of construction at each work site.

Increased Predation. Gen-tie line construction activities could provide resources in the form of trash, litter, or water, which attract and subsidize unnaturally high numbers of predators such as common ravens, coyotes, and feral dogs, as describe in Section 4.4.7. These impacts can be mitigated through implementation of Mitigation Measures VEG-1 (Assign a Designated Biologist

and Biological Monitors), MM VEG-2 (Conduct Biological Monitoring and Reporting during Project Construction, Operations, and Decommissioning), MM VEG-3 (Prepare and Implement a Worker Environmental Awareness Program), MM WIL-1 (Wildlife Impact Avoidance and Minimization), and MM WIL-8 (Raven Monitoring, Management, and Control Plan).

Operation and Maintenance

O&M of Alternative B could directly affect wildlife due to long-term habitat effects (described in Section 4.3.12), and additional effects of transmission line corona noise, bird or bat collisions with gen-tie conductors, ongoing potential for introduction or spread of invasive weeds, and ongoing availability of raven "subsidies" (i.e., perch and nest sites). Transmission lines generate audible "corona noise" during operation. The noise is generally characterized as a crackling, hissing, or humming sound and is most noticeable during wet conductor conditions such as rain or fog. The amount of corona noise produced by a transmission line is a function of the voltage of the line, the diameter of the conductor (or bundle of conductors), the elevation of the line above sea level, the condition of the conductor and hardware, and the local weather conditions. This noise increases with the voltage of the line, irregularities on the conductor surface caused either by age or moisture, and during high humidity, fog, or rain.

Direct Effects

Noise Impacts to Wildlife. Corona noise generated by the gen-tie line would result in noise levels of 50 dBA at the edge of the transmission line ROW. This noise level may be higher during rainstorms and in conjunction with corona noise generated by the other transmission lines to be located in the same ROW. However, noise levels would attenuate quickly with distance away from the line, blending with the existing ambient noise levels. Wildlife would likely notice the corona noise only when passing within close proximity to the line, and local wildlife would likely acclimate quickly to the noise.

Collisions and Electrocutions. The gen-tie line could present collision or electrocution risk to birds or bats. Bird mortality due to collision with overhead power lines, towers, cranes, or other features could occur during construction, O&M, or decommissioning of any project component, but are discussed here due to the long-term and persistent potential for collisions with the gen-tie lines.

Bird collisions with power lines generally occur when: (1) a power line or other aerial structure transects a daily flight path used by a concentration of birds, or (2) migrant birds are traveling at reduced altitudes and encounter tall structures in their path. Collision rates generally increase in low light conditions, during rain, snow, or strong winds, and during panic flushes when birds are startled by a disturbance or are fleeing from danger. Collisions are more probable near wetlands, valleys that are bisected by power lines, and within narrow passes where power lines run perpendicular to flight paths. Passerines (e.g., songbirds) and waterfowl (e.g., ducks) collide with wires (APLIC 2006), particularly during nocturnal migrations or poor weather conditions (Avery et al. 1978). However, passerines and waterfowl have a lower potential for collisions than larger birds, such as raptors. Passerines and waterfowl tend to fly under power lines, while larger species generally fly over lines and risk colliding with higher static lines. Also, many smaller birds tend to reduce their flight activity during poor weather conditions (Avery et al. 1978). The magnitude of collision-caused bird mortality cannot be predicted without extensive information on bird species, abundance, and movements in the area.

Large raptors including golden eagles, Swainson's hawks, ferruginous hawks, red-tailed hawks, prairie falcons, and other large aerial perching birds such as turkey vultures, are susceptible to electrocution on power lines because of their large size and proclivity to perch on tall structures. Transmission structure design is a major factor in causing or preventing raptor electrocutions. Electrocution occurs when a perching bird simultaneously contacts two energized phase conductors or an energized conductor and grounded hardware. This happens most frequently when a bird attempts to perch on a transmission structure with insufficient clearance between the conductor phases or conductors and grounds. The majority of raptor electrocutions are caused by distribution lines and relatively small transmission lines, energized at voltage levels between 1 kV and 69 kV. Higher voltage transmission lines are built with wider spacing between the conductors and grounds, and present reduced threat of electrocution. Electrocution can occur when horizontal separation is less than the wrist-to-wrist (flesh-to-flesh) distance of a bird's wingspan or where vertical separation is less than a bird's length from head-to-foot. Electrocution can also occur when birds perched side-by-side span the distance between these elements (APLIC 2006).

The largest bird that is likely to come in contact with the gen-tie line is golden eagle (average wingspan to 7.5 feet; wrist-to-wrist length of 3.5 feet; height to 2.2 feet). The red-tailed hawk is the most common large bird that could come in contact with the gen-tie lines (average wingspan to 4.7 feet; wrist-to-wrist length of 1.9 feet; height to 1.8 feet). Other large birds in the area are turkey vulture (average 5.8-foot wingspan, two-foot wrist-to-wrist length, 1.8 feet tall) and great horned owl (average 4.3-foot wingspan, 2.1-foot wrist-to-wrist length, 1.3 feet tall). Swainson's hawk has a 4.5-foot wingspan, and can be 1.3 feet tall (bird sizes from APLIC 2006). The Avian Powerline Interaction Committee (APLIC 2006) guidelines recommend 60-inch separations between components to protect eagles and other birds from electrocution. The risk of electrocution would be minimized by implementation of Mitigation Measure WIL-1**,** which requires that the project owner implement APLIC Guidelines for the gen-tie and all electrical components.

Nesting Birds. Some bird species will likely nest on the gen-tie line structures during O&M. The potential for impacts to nesting birds during O&M would be similar to those described during the construction phase, for birds that may nest on the ground close to equipment, within the open metal framework of the panel structures, on buildings or other structures, or on idle construction equipment. The nesting behaviors of some native birds increases the likelihood that project O&M would require the removal or relocation of active nests in order to safely operate the facility. Mitigation Measure WIL-6 (Bird and Bat Conservation Plan) would require an evaluation of potential project hazards to birds and bats and implementation of adaptive management measures as appropriate to address them. This measure is expected to mitigate this potential risk to the extent feasible, but an unknown residual risk to birds may remain, even with implementation of the Bird and Bat Conservation Plan.

Indirect Effects

The indirect effects of the gen-tie O&M to wildlife and wildlife habitat include the ongoing potential for introduction or spread of invasive weeds, and increased predation on native species, including desert tortoise, due to predator "subsidies" (i.e., perch and nest sites for common ravens). The indirect effects of invasive weeds, and mitigation of those effects would be as described in Section 4.3.7. The indirect effects of predator subsidies during project O&M, and mitigation of those effects, would be as described in Section 4.4.7.

Decommissioning

Decommissioning of the gen-tie line is summarized in Chapter 2. The Alternative B gen-tie line, at least the DHSP portion, would be decommissioned concurrently with the solar generation facility at the end of its operational lifetime (30 years); however, the actual life of the project could be longer or shorter. When permanent closure is appropriate, a decommissioning plan will be prepared and submitted to the BLM for review and approval. The decommissioning plan will address the gen-tie line as well as the solar facility. Closure strategies may include temporary "mothballing," removing old facilities and upgrading to newer solar technology, or complete removal of equipment and restoration of the land to BLM-approved specifications. Impacts to wildlife resources would vary, according to the decommissioning strategy and the intended re-use of the site.

Direct Effects

Facilities removal during decommissioning would be expected to take place within the previously disturbed work areas, addressed as long-term construction impacts in this analysis. Removal or degradation of wildlife habitat would be limited to sites where those resources had recovered naturally or through implementation of the project owner's Vegetation Resources Management Plan (per Mitigation Measure VEG-5). Any potential direct impacts beyond the work areas would be limited to the effects of dust, noise, lighting, or similar direct off-site impacts, as discussed in Section 4.4.7, under direct effects of construction. These decommissioning impacts can be reduced through implementation of Mitigation Measures VEG-1 through MM VEG-6, as described in Section 4.3 and MM WIL-1 through MM WIL-8.

If the ultimate re-use of the alignment is to return it to natural open space, then the expected recontouring and replanting during decommissioning would have a net benefit to vegetation resources. This potential beneficial impact cannot be evaluated at this time, pending the final re-use decision and the details of the decommissioning plan.

Indirect Effects

The indirect effects of decommissioning to wildlife resources would be similar to the indirect effects described under Alternative B for project construction. These impacts would be minimized by Mitigation Measures VEG-1 (Assign a Designated Biologist and Biological Monitors), MM VEG-2 (Conduct Biological Monitoring and Reporting during Project Construction, Operations, and Decommissioning), MM VEG-3 (Prepare and Implement a Worker Environmental Awareness Program), MM VEG-9 (Prepare and Implement an Integrated Weed Management Plan), MM WIL-1 (Wildlife Impact Avoidance and Minimization), and MM WIL-8 (Raven Monitoring, Management, and Control Plan).

Mitigation Measures

Mitigation measures to reduce or minimize impacts of Alternative B to wildlife resources are the same as those required in Section 4.4.7 for Alternative 4.

Residual Impacts and Unavoidable Adverse Effects

With the implementation of Mitigation Measures VEG-1 through MM VEG-9 and MM WIL-1 through MM WIL-8**,** residual impacts to wildlife resources would be

(1) the net loss of habitat on the alignment;

(2) the direct effects of dust, noise, and other disturbances to adjacent off-site habitat during construction, O&M, and decommissioning of the gen-tie line; and

(3) the potential, but unquantified loss of birds during gen-tie O&M.

These impacts are described for Alternative B, under direct and indirect impacts of project construction and O&M.

4.4.13 Alternative C – Separate Transmission Towers within Same ROW

Alternative C would parallel the approved (but not yet constructed) Desert Sunlight gen-tie line, but would be located on separate towers within the same, or a slightly larger, ROW (Figure 2-14 in Appendix A). Because Alternative B is described and analyzed in Section 4.4.12 as a stand-alone alternative (i.e., without the presumption that the Desert Sunlight gen-tie would be built), the Alternative C design, construction, O&M, and decommissioning impacts are the same as described for Alternative B. The Alternative C alignment would be the same as Alternative B but would be located approximately 100 feet west of the Desert Sunlight towers, in a wider ROW. The same number of towers in a nearly identical alignment to that of the DSSF towers would be constructed. As described for Alternative B, the estimated area of permanent and long-term impacts for Alternative C is 92 acres. The Alternative C ROW would extend west of the approved DSSF gen-tie ROW, 60 feet into the adjacent Chuckwalla DWMA, to accommodate the overhang of transmission line conductors from the tower cross-members. No planned temporary or permanent ground disturbance would occur within the DWMA; ground disturbance in the DWMA would occur only during emergency maintenance. Any ground disturbance that occurs within the DWMA would be mitigated as described in MM VEG-6, which requires compensation at a 5:1 ratio for impacts to the DWMA.

Construction

Direct and indirect effects to wildlife resources during construction of Alternative C would be as described in Section 4.4.12 for the indirect construction effects of Alternative B.

Operation and Maintenance

Direct and indirect effects to wildlife resources during O&M of Alternative C would be as described in Section 4.4.12 for the indirect construction effects of Alternative B.

Decommissioning

Direct and indirect effects to wildlife resources during decommissioning of Alternative C would be as described in Section 4.4.12 for the indirect construction effects of Alternative B.

Mitigation Measures

Mitigation measures to reduce or minimize impacts of Alternative C to wildlife resources are the same as those required in Section 4.4.12 for Alternative B.

Residual Impacts and Unavoidable Adverse Effects

With the implementation of Mitigation Measures VEG-1 through MM VEG-9 and MM WIL-1 through MM WIL-8**,** residual impacts to wildlife resources would be (1) the net loss of habitat on the alignment; (2) the direct effects of dust and other disturbances to adjacent off-site habitat during construction, O&M, and decommissioning of the gen-tie line; and (3) the potential, but unquantified loss of birds during gen-tie O&M. These impacts are described in Section 4.4.7 for direct and indirect impacts of project construction and operation.

4.4.14 Alternative D – Cross-Valley Alignment

The DHSP gen-tie line Alternative D is the same alignment that was analyzed as the Desert Sunlight gen-tie alignment Alternative A-2 (BLM 2011) (see Figure 2-15 in Appendix A). The centerline of gen-tie Alternative D would be located 140 to 150 feet from the centerline of the existing SCE line, but the new gen-tie alignment would not be within the SCE ROW. Habitat types and biological resources within the Alternative D alignment are generally similar to those within Alternative B, except that there is more active and disused agricultural land on the Alternative D alignment. Construction disturbances within the ROW would be similar to those described for gen-tie Alternative B (Section 4.4.12), including construction of any new permanent or temporary access roads; transmission structures; splicing/pull sites; and guard structures. The specific locations and numbers of these project components have not been determined. The materials and equipment staging areas and laydown areas would be located within the solar facility site, and no additional habitat disturbance would be needed for these project components (see Chapter 2).

Construction

Project construction, including construction methods, equipment, scheduling, and phasing, are described in Chapter 2. Construction of Alternative D would directly and indirectly affect wildlife and wildlife habitat. These effects, and mitigation measures to reduce the severity of these effects, are discussed below.

Most direct effects of Alternative D construction to wildlife would be as described for Alternative B. Construction impacts to wildlife habitat would be reduced because portions of the Alternative D alignment cross disused agricultural lands, and because the overall alignment is shorter than Alternative B's (Section 4.3). Impacts of Alternative D to wildlife management areas would be reduced from 35.7 acres to 20.3 acres (12.4 acres of CHU, 1.7 acres of DWMA/CHU overlap areas, and 6.2 acres of WHMA; see Table 4.4-2).

The remainder of this alternative's impacts to wildlife, including wildlife mortality; noise and lighting impacts; impacts to native birds, desert tortoise, golden eagles, other special-status wildlife species, and large mammals; and wildlife movement would be as described for gen-tie line Alternative B, and would be mitigated as described in Section 4.4.12.

Alternative D's indirect effects would be substantially the same as those identified for Alternative B, and would be mitigated as described for Alternative B.

Operation and Maintenance

O&M of Alternative D would directly affect wildlife as described for Alternative B, and would be mitigated as described for Alternative B.

Decommissioning

Potential decommissioning impacts to wildlife and wildlife habitat are unknown, and will depend upon the details of the Decommissioning Plan and the ultimate re-use of the alignment. In general, the direct and indirect effects of decommissioning gen-tie line Alternative D would be as described for Alternative B. If the ultimate re-use of the alignment is to return it to natural open space, then decommissioning would have a net benefit to wildlife resources. This potential beneficial impact cannot be evaluated at this time, pending the final re-use decision and the details of the decommissioning plan.

Mitigation Measures

Mitigation measures to reduce or minimize impacts of Alternative D to wildlife resources are the same as those required in Section 4.4.12 for Alternative B.

Residual Impacts and Unavoidable Adverse Effects

With the implementation of Mitigation Measures VEG-1 through MM VEG-9 and MM WIL-1 through MM WIL-8**,** residual impacts to wildlife resources would be (1) the net loss of habitat on the alignment; (2) the direct effects of dust and other disturbances to adjacent off-site habitat during construction, O&M, and decommissioning of the gen-tie line; and (3) the potential, but unquantified loss of birds during gen-tie O&M.

4.4.15 Alternative E – New Cross-Valley Alignment

Gen-tie Alternative E would be a new ROW alignment across the Chuckwalla Valley (Figure 2-16 in Appendix A). It would not follow any existing or approved utility or road ROW. Construction disturbances within the ROW would be similar to those described for gen-tie Alternative B (Section 4.4.12). The total anticipated disturbance area is estimated as 85 acres for the purpose of this analysis.

Gen-tie Alternative E is the only alternative or project component that would affect windblown sand habitat, and as a result has the potential to affect special-status plants and wildlife species that might be found in that habitat, as described below and in Sections 3.3 and 3.4. Based on the proportions of each vegetation type along the alignment, this analysis estimates that 13 acres of Creosote Bush Scrub (Sonoran Desert Scrub) on partially stabilized sandfields and 7 acres of active sand dunes would be affected by Alternative E.

Construction

Project construction, including construction methods, equipment, scheduling, and phasing, are described in Chapter 2. Construction of Alternative E would directly and indirectly affect wildlife and wildlife habitat. These effects, and mitigation measures to reduce the severity of these effects, are discussed below.

Direct Effects

Most direct effects of Alternative E construction to wildlife would be as described for Alternative B (Section 4.4.12). Construction impacts of Alternative E to wildlife management areas would increase from 35.7 acres to 56.1 acres (2.5 acres of DWMA, 1.8 acres of DWMA/CHU overlap areas, and 51.8 acres of WHMA; see Table 4.4-2).

Mojave Fringe-toed Lizard and Palm Springs Round-Tailed Ground Squirrel. Project construction would affect occupied habitat for Mojave fringe-toed lizard and suitable habitat for Palm Springs round-tailed ground squirrel along the gen-tie line alignment, and could cause direct mortality of these species by crushing or other effects, as described above for reptiles and small mammals under the analyses for Alternative B (Section 4.4.12). Implementation of Mitigation Measures VEG-6 and MM WIL-1 (Wildlife Impact Avoidance and Minimization) would reduce or offset these impacts. For Alternative E, MM VEG-6 (Provide Off-Site Compensation for Impacts to Vegetation and Habitat) includes a requirement to compensate for impacts to occupied and suitable Mojave fringe-toed lizard habitat at a 5:1 ratio.

The remainder of this alternative's impacts to wildlife, including wildlife mortality; noise and lighting impacts; impacts to native birds, desert tortoise, golden eagles, other special-status wildlife species, and large mammals; and wildlife movement would be as described for Alternative B, and would be mitigated as described in that section.

Indirect Effects

Construction of gen-tie line Alternative E would have indirect impacts to wildlife and its habitat, as described for Alternative B, including introduction or spread of invasive weeds, displaced wildlife, and increased predation due to predator "subsidies" provided during construction. In addition to the impacts to common species and special-status species, discussed in Section 4.4.12, this alternative would also have indirect effects to aeolian sand habitat and associated special-status species including Mojave fringe-toed lizard and Palm Springs round-tailed ground squirrel. Indirect impacts to these species would be as discussed above for other small, terrestrial species, and include the potential for loss of habitat through introduction or spread of invasive weed species and a potential increase in predators through subsidies. These impacts would be mitigated or offset through the implementation of MM VEG-9, which requires the project owner to prepare and implement an Integrated Weed Management Plan; and MM WIL-8, which would require management of all potential predator subsidies, monitoring of raven presence and abundance, implementation of specific control measures as needed, and contribution to the region-wide Raven Management Program.

Operation and Maintenance

O&M of Alternative E would directly affect wildlife as described for Alternative B. These effects would include noise, collision and electrocution hazards, and potential interference of nesting birds with O&M of the gen-tie line. These impacts would be mitigated as described above, for Alternative B. Additionally, O&M of Alternative E could cause mortality or other ongoing disturbance to special-status species in aeolian sand habitats, by crushing the animals during O&M activities or causing other habitat impacts. These effects would be similar to the effects during construction, described for Alternative B and mitigation would be the same.

Decommissioning

Potential decommissioning impacts to wildlife and wildlife habitat are unknown, and will depend upon the details of the Decommissioning Plan and the ultimate re-use of the alignment. In general, the direct and indirect effects of decommissioning gen-tie line Alternative E would be as described for Alternative B. If the ultimate re-use of the alignment is to return it to natural open space, then decommissioning would have a net benefit to wildlife resources. This potential beneficial impact cannot be evaluated at this time, pending the final re-use decision and the details of the decommissioning plan.

Mitigation Measures

Mitigation measures to reduce or minimize impacts of Alternative D to wildlife resources are the same as those required in Section 4.4.12 for Alternative B.

Residual Impacts and Unavoidable Adverse Effects

With the implementation of Mitigation Measures VEG-1 through MM VEG-9 and MM WIL-1 through MM WIL-8, the residual impacts to wildlife resources under Alternative E would be the same as those for Alternative B.

4.4.16 Cumulative Effects

Geographic Scope

The geographic scope and methodology, analytical tools and study limitations, and past, present, and reasonably foreseeable projects for the analysis of cumulative impacts to biological resources, vegetation species were described in detail in Section 4.3.16. For the majority of wildlife species, the same NECO planning area relevant to vegetation resources encompasses the geographic scope for the cumulative analysis for wildlife. For the desert tortoise, the geographic scope for this analysis is the Colorado Desert Recovery Unit, as described in the Revised Recovery Plan for the Mojave Population of the Desert Tortoise (USFWS 2011a).

The geographic scope for the analysis of cumulative impacts on wildlife movement and connectivity is the Chuckwalla Valley and surrounding mountain ranges at a local scale, and, more broadly, the entire California Desert. In the areas identified for renewable energy development in eastern Riverside County, some of the many sensitive biological resources at risk include desert tortoise, golden eagle, burrowing owl, Mojave fringe-toed lizard, Nelson's bighorn sheep, and a wide variety of other special-status wildlife. As described in Section 4.3.16, habitat loss and degradation in the Chuckwalla Valley and the NECO planning area has resulted from historical grazing, current and historic agriculture, and military training, among other factors. Fragmentation of habitat from has occurred from highway and aqueduct construction. An increase in predators such as ravens has also contributed to habitat degradation, population declines, and range contractions for many special-status wildlife species (Boarman 2002).

The project site supports habitat for, and in some instances populations of, numerous special-status wildlife species, as described in Section 3.4 (Biological Resources – Wildlife). These include species under federal or state protection, including desert tortoise, golden eagle, burrowing owl, and other special-status species in California. Many of these species occur throughout the geographic scope of the analysis of cumulative impacts, and would be impacted by numerous

projects in the cumulative scenario (Section 4.1). The analysis of cumulative impacts to wildlife movement and habitat connectivity (below) expands on the analysis presented in Section 4.4.7, by considering the cumulative impacts of the proposed project, the Desert Sunlight project, and other projects in the area.

Table 4.4-3. Cumulative Projects within the Geographic Scope of Cumulative Analysis

Resource Area / BLM Program Area	Geographic Area of Consideration	Elements to Consider	BLM Authorized and Other Known County Projects/Actions/Activities
Biological Resources – Wildlife	NECO planning area for most species. Colorado Desert Recovery Unit For the desert tortoise, the geographic scope is the Colorado Desert Recovery Unit, as described in the Revised Recovery Plan for the Mojave Population of the Desert Tortoise	Loss of desert tortoise habitat and connectivity, impacts to sensitive species, impacts to connectivity	All projects within the NECO planning area listed in Table 4.1-1 and 4.1-2 Projects closest to the DHSP site are primarily renewable energy and infrastructure projects, and include • Desert Sunlight Solar Farm Project • SCE Red Bluff Substation • Eagle Mountain Wind Project • Devers-Palo Verde No. 2 Transmission Line Project • Desert Southwest Transmission Line • Desert Center 50 Solar Project • Silverado Project • Palen Solar Energy Project.

As with the vegetation analysis, project impacts related to wildlife could occur during the construction phase of the project, the planned 30-year operational life of the DHSP, and the decommissioning phase. This analysis considers these timeframes.

Cumulative Effects Analysis

There would be no cumulative wildlife impacts under the No Action or No Project Alternatives (Alternatives 1, 3, or A) because there would be no ROW grant for development of the solar farm area and associated facilities, including the gen-tie line. Alternative 2: No Project Alternative (with Plan Amendment to Find the Site Suitable for Solar Energy Development) could contribute to cumulative wildlife impacts because the CDCA Plan could be amended to allow solar development of the site. However, any future proposals for use of the site would be subject to separate environmental analysis and since such future proposals are unknown at this date, any impacts are also unknown. The remainder of this section addresses the Action Alternatives: Alternatives 4 through 7 and gen-tie alignment Alternatives C through E.

Alternative B would not contribute to cumulative wildlife effects, as the cumulative scenario assumes concurrent construction of the Desert Sunlight approved gen-tie and Alternative B conductor stringing using the same crew at the same time, with no additional work required for Alternative B beyond what is required for the Desert Sunlight gen-tie.

Wildlife Habitat

The development of numerous large-scale projects, such as other solar and wind generation facilities, would result in a substantial permanent conversion of desert habitat to industrial and commercial uses. Existing and foreseeable future projects in the NECO planning area (not including the DHSP) would result in the total projected loss of 4.5 percent of the Sonoran Creosote Bush Scrub (Sonoran Desert Scrub) and 6.5 percent of the Desert Dry Wash Woodland habitat in the

NECO planning area (see Section 4.3.16). This would constitute a substantial cumulative impact on these plant communities and wildlife habitat through direct habitat loss and habitat fragmentation. As shown in Table 4.3-6, implementation of Alternatives 4 through 7 would each contribute approximately 0.4 percent to this cumulative impact to Sonoran Creosote Bush Scrub (Sonoran Desert Scrub) and between 0.9 and 1.2 percent to the cumulative impact to Desert Dry Wash Woodland. Due to the function of these vegetation communities as wildlife habitat, Alternatives 4 through 7 would contribute considerably to cumulative impacts to wildlife habitat.

Gen-tie alignment Alternatives B through E would impact between 85 and 92 acres of wildlife habitat. These acreages are relatively small by comparison with other past, present, and foreseeable future projects. But any gen-tie alternative, in contribution with solar facility Alternative 4, 4, or 5, would contribute further to the project's overall proportion of the substantial cumulative adverse impacts to wildlife habitat. Cumulative impacts to wildlife habitat are discussed in detail Section 4.3.16, under *Native Vegetation Including Sensitive Natural Communities*.

Common Wildlife

The incremental contribution of the proposed project or its alternatives to cumulative impacts to common wildlife, including most resident and migratory birds, would be habitat loss and fragmentation. Existing and foreseeable future projects in the NECO planning area (not including the DHSP) would result in the total projected loss of 4.5 percent of the Sonoran Creosote Bush Scrub (Sonoran Desert Scrub) and 6.5 percent of the Desert Dry Wash Woodland habitat in the NECO planning area (see Section 4.3.16). This would constitute a substantial cumulative impact on habitat for common wildlife species. In addition to habitat loss, the DHSP would contribute to a variety of other direct and indirect cumulative effects to wildlife, including mortality, displacement, increased predation, noise and lighting disturbances, and off-site edge effects to habitat quality. These effects would take place during construction, O&M, and decommissioning of the DHSP and other regional projects. Cumulatively, these effects to common wildlife species are substantial. Most common wildlife species range widely over California, and these species have not been identified as conservation priorities. The proposed project or its alternatives would contribute incrementally to impacts to common wildlife such as disruption of movement, disturbance, mortality, loss of habitat, and fragmentation. With the incorporation of mitigation measures, including MM VEG-1 through MM VEG-9 and MM WIL-1 though MM WIL-8 (see Section 4.4.7), this incremental contribution would be mitigated to the extent feasible and would not result in the loss of a population or a trend toward federal or State listing for any common wildlife species. With incorporated mitigation, the DHSP would not make a considerable contribution to the cumulative regional impacts to common wildlife, when combined with the effects of past and foreseeable future projects in the NECO planning area.

Special-Status Wildlife

Desert Tortoise. The incremental contribution of the proposed project or its alternative to cumulative impacts to desert tortoise would be similar to the impacts of other solar developments in the Colorado Desert Recovery Unit, and would include loss of habitat, interference with regional movement, potential for stress, illness, or mortality from translocation (if tortoises are translocated), and indirect impacts from an increase in predators such as the common raven. Effects to desert tortoise habitat were analyzed using the current USGS Desert Tortoise Habitat Model (Nussear et al. 2009). Table 4.4-4, *Cumulative Effects: Desert Tortoise Habitat*, summa-

rizes the results of this habitat model applied across the Colorado Desert Recovery Unit. The results are stratified by modeled habitat value and presented as acres of habitat and as percentage of all habitat affected. The model is a predictive tool for mapping the potential distribution of desert tortoise habitat and is useful for evaluating land use decisions potentially affecting desert tortoises at a landscape scale. It is not intended to be used, or viewed, as a substitute for ground-based, site-specific field surveys. Modeled habitat scores reflect a hypothesized habitat potential given the range of environmental conditions where tortoise occurrence was documented. The report (Nussear et al. 2009) emphasizes that:

> *. . . there are likely areas of potential habitat for which habitat potential was not predicted to be high, and likewise, areas of low potential for which the model predicted higher potential. Finally, the map of desert tortoise potential habitat that we present does not account either for anthropogenic effects, such as urban development, habitat destruction, or fragmentation, or for natural disturbances, such as fire, which might have rendered potential habitat into habitat with much lower potential in recent years.*

The USGS Desert Tortoise Habitat Model maps most of Colorado Desert Recovery Unit as medium- to high-quality desert tortoise habitat, with scores of 0.4-0.9 on a scale of 0 to 1 (1 being the highest quality). However, the habitat model ascribes a low quality habitat value (0.0-0.1) to the vast majority of the DHSP footprint. The DHSP's effects on desert tortoise habitat (based on the 2009 USGS habitat model) are quantified in Table 4.4-4. Most of the proposed projects in the Colorado Desert Recovery Unit would impact moderate- to high-quality desert tortoise habitat. The DHSP would primarily impact low-quality habitat. However, the contribution of the proposed project or its alternatives to cumulative habitat loss in connection with other reasonably foreseeable future projects, even for moderate to low-quality desert tortoise habitat, is considered substantial, given the species' decline and the present and future threats.

Table 4.4-4. Cumulative Effects: Desert Tortoise Habitat (acres)

Habitat Value[1]	Desert Tortoise Habitat[1] in Colorado Desert Recovery Unit	Impacts to Habitat from Existing Projects[2]	Impacts to Habitat from Foreseeable Future Projects[3]	Contribution of DHSP to Future Cumulative Impacts
0	487,010	67,028	1,617	Alt 4: 718.6 Alt 5: 675.4 Alt 6: 716.8 Alt 7: 716.8 Alt C: 0 Alt D: 12.6 Alt E: 0
0.1	423,204	9,094	9,198	Alt 4: 484 Alt 5: 481.2 Alt 6: 322.5 Alt 7: 322.5 Alt C: 4.5 Alt D: 27.4 Alt E: 43.7

Table 4.4-4. Cumulative Effects: Desert Tortoise Habitat (acres)

Habitat Value[1]	Desert Tortoise Habitat[1] in Colorado Desert Recovery Unit	Impacts to Habitat from Existing Projects[2]	Impacts to Habitat from Foreseeable Future Projects[3]	Contribution of DHSP to Future Cumulative Impacts
0.2	479,429	9,288	17,618	Alt 4: 4.6 Alt 5: 4.6 Alt 6: 4.6 Alt 7: 4.6 Alt C: 16.6 Alt D: 4.1 Alt E: 61.7
0.3	785,506	11,986	31,621	Alt 4: 0 Alt 5: 0 Alt 6: 0 Alt 7: 0 Alt C: 19.6 Alt D: 17.8 Alt E: 41.1
0.4–0.5	1,035,547	15,885	45,885	Alt 4: 0 Alt 5: 0 Alt 6: 0 Alt 7: 0 Alt C: 18.8 Alt D: 111.5 Alt E: 36.2
0.6–0.7	1,723,734	10,279	51,872	Alt 4: 0 Alt 5: 0 Alt 6: 0 Alt 7: 0 Alt C: 165.2 Alt D: 19.6 Alt E: 40.3
0.8–0.9	2,635,526	9,233	109,567	0
1.0	42,278	71	2,362	0

1 - Based on the USGS Desert Tortoise Habitat Model (Nussear et al. 2009).
2 - Includes only those existing projects for which GIS-based spatial data was available at the time of the analysis.
3 - Includes only BLM Renewables that had submitted a Plan of Development at the time of the analysis and the proposed Silverado Project.

The proposed project or its alternatives would also contribute to a substantial cumulative loss of desert tortoise habitat connectivity among the Chuckwalla and Joshua Tree DWMAs and critical habitat areas, as well as the greater connectivity between the Colorado Desert Recovery Unit and the Western Mojave Recovery Unit. One of the objectives for desert tortoise recovery in the NECO is to "mitigate effects on desert tortoise populations and habitat outside DWMAs to provide connectivity between DWMAs." Maintaining connectivity is particularly important given the threats posed by global climate change, according to the USFWS 2011 Revised Recovery Plan (USFWS 2011a). The cumulative impacts to desert tortoise habitat connectivity, and the contribution of the proposed project or its alternatives to those impacts, are discussed further, under Wildlife Movement and Connectivity, below.

Desert tortoises are likely to inhabit the solar facility site in low numbers (Section 4.4.7). The proposed project or its alternatives would have permanent and long-term impacts to 1,208 acres of habitat at the solar facility site, and 92 acres along the gen-tie line Alternative C alignment.

Cumulative impacts to desert tortoise critical habitat are discussed below under *Wildlife Management Areas and Critical Habitat*.

The contribution of the proposed project or its alternatives to the cumulative loss of desert tortoise habitat would be offset through implementation of Mitigation Measure VEG-6 (Provide Off-Site Compensation for Impacts to Vegetation and Habitat). This measure specifies that compensation habitat will be located within the Colorado Desert Recovery Unit in areas that have potential to contribute to desert tortoise habitat connectivity and build linkages between desert tortoise designated critical habitat, known populations of desert tortoise, or other preserve land. Other desert-tortoise-specific mitigation measures required to address the impacts of the proposed project or its alternatives to desert tortoises, including the contribution to cumulative effects, are described in Section 4.4.7.

Mojave Fringe-Toed Lizard. The development of previous, current, and foreseeable future projects would result in substantial cumulative adverse impacts to Mojave fringe-toed lizard habitat (dune systems, sandfields, and other aeolian sand habitats). Cumulative impacts include the direct loss of these habitats, as well as the adverse impacts of interrupted sand transport. Existing projects in the NECO planning area (not including the DHSP) account for a loss of about 2.5 percent of sand dune habitat in the NECO Planning Area (Table 4.3-6), and foreseeable future projects would contribute slightly (128 acres) to this loss. But these acreages do not account for effects of interrupted sand transport. Some projects have been redesigned or relocated to avoid or minimize these impacts, reducing the severity of future contributions to the overall cumulative impact. The solar facility site and most of the alternative gen-tie alignments would not affect Mojave fringe-toed lizard or its habitat. Gen-tie Alternative E, however, would cross occupied MFTL habitat over a portion of its alignment in the dune system at the base of the Coxcomb Mountains. It would impact 7 acres of Mohave fringe-toed lizard habitat (Table 4.3-2) for access road and transmission line construction. None of the project alternatives would cause appreciable interruption to aeolian sand transport or deposition. Mitigation measures described in Section 4.4.7 and Section 4.4.15 would minimize potential adverse impacts to Mojave fringe-toed lizard and its habitat during transmission line work, if Alternative E is selected. If the proposed project or its alternatives causes an increase in predators such as the common raven due to food, water, perching, and nesting habitat subsidies, then these indirect project impacts could affect the off-site Mojave fringe-toed lizard population and contribute to regional cumulative effects. Mitigation Measure WIL-8 would require a Raven Monitoring, Management, and Control Plan to prevent or minimize project-related increases in raven populations. With incorporation of the mitigation measures, the proposed project's incremental contribution to loss of habitat and other adverse impacts to Mojave fringe-toed lizard would not be substantial.

Golden Eagle. The proposed project or its alternatives would contribute to the cumulative regional loss of golden eagle foraging habitat. The project site does not provide suitable golden eagle nesting habitat, but there are several golden eagle nesting territories within a 10-mile radius (BLM 2011). Most nesting areas are in the desert mountain ranges and are not likely to be directly affected by the majority of projects listed in the cumulative scenario. The entire solar facility site and each of the gen-tie line alternatives provide potential foraging habitat and are within foraging range of known or potential nest sites. Other renewable developments, both existing and proposed, in the NECO planning area would have similar impacts, and cumulatively, development in the California deserts would have substantial impacts to golden eagle foraging habitat. Desert shrubland vegetation throughout the NECO Planning Area provides

suitable foraging habitat for golden eagles, during breeding, wintering, or migratory seasons. Cumulative impacts to this habitat are summarized in Section 4.3-14, including Table 4.3-6. The adverse cumulative effects of existing and foreseeable future projects (not including the proposed project) to foraging habitat are substantial. The proposed project or its alternatives would contribute at least incrementally to the cumulative loss of golden eagle foraging habitat. Implementation of mitigation measures described in Section 4.4.7 would minimize project impacts to golden eagle foraging habitat. Mitigation Measure VEG-6, which would require compensatory land acquisition, would mitigate project-specific loss of foraging habitat. Mitigation Measures WIL-5 (Golden Eagle Pre-construction and Construction Phase Surveys) and MM WIL-6 (Bird and Bat Conservation Strategy) would require acquisition of additional data on golden eagle habitat use in the area, and preparation and implementation of a conservation strategy, to include minimization of potential impacts to golden eagles, and including adaptive management actions. With implementation of these measures, the contribution of the proposed project or its alternatives to cumulative impacts to golden eagles would be reduced or offset.

Burrowing Owl. The proposed project or its alternatives would contribute incrementally to the cumulative loss of burrowing owl wintering habitat and possibly breeding habitat. While no burrows with sign were identified on the solar facility site, 2 burrowing owls were observed during field studies outside the breeding season. Habitat on the site and along most of the gen-tie alternative alignments appears suitable for nesting and wintering. Impacts of the proposed project or its alternatives would be similar to other solar developments in the region, and could include loss of breeding or wintering habitat, disturbance due to human activities, and destruction of active (nesting or wintering) burrows. Desert shrubland vegetation throughout much of the NECO Planning Area provides suitable wintering or breeding habitat for burrowing owls. Cumulative impacts to this habitat are summarized in Section 4.3-14, including Table 4.3-6. The adverse cumulative effects of existing and foreseeable future projects (not including the proposed project) to burrowing owl habitat are substantial. The proposed project or its alternatives would contribute at least incrementally to the cumulative loss of burrowing owl habitat. However, due to the low level of use, and an apparent rarity of breeding on-site, the incremental contribution of the proposed project or its alternatives to cumulative impacts to burrowing owls would be minor. Implementation of mitigation measures described in Section 4.4.7 would reduce or offset the contribution of the proposed project or its alternatives to cumulative impacts.

Other Special-Status Birds. The proposed project or its alternatives would contribute incrementally to the cumulative loss of habitat for several special-status birds, described in Section 4.4.7. The primary impacts of the proposed project or its alternatives to resident and migratory birds include habitat loss, disturbance to foraging and breeding, and risk of injury or mortality due to collision with project features. Desert shrubland vegetation throughout the NECO Planning Area provides suitable habitat for special status birds. Cumulative impacts to this habitat are summarized in Section 4.3-14, including Table 4.3-6. The adverse cumulative effects of existing and foreseeable future projects (not including the proposed project) to these habitats are substantial. The proposed project or its alternatives would contribute at least incrementally to the cumulative loss of special-status bird habitat. This contribution would be further reduced or offset by the implementation of mitigation measures described in Section 4.4.7.

Special-Status Bats. Special-status bats of the local area are discussed in Section 4.4.7. Bats may forage over the project area, and may be drawn to the area by the storage ponds (during construction) or the evaporation pond (during O&M). Due to the lack of extensive or high-quality

roosting habitat in or near the project area, and the widespread availability of similar foraging habitat in the Chuckwalla Valley and beyond, the incremental contribution of the proposed project or its alternatives to cumulative impacts to bats would be minor. This contribution would be further reduced by the implementation of mitigation measures described in Section 4.4.7.

American Badger and Desert Kit Fox. The proposed project or its alternatives would contribute incrementally to the cumulative loss and fragmentation of habitat for badgers and desert kit fox. These impacts are similar to impacts that would result from other past and foreseeable future developments within the NECO planning area. Desert shrubland vegetation throughout much of the NECO Planning Area provides suitable habitat for both species. Cumulative impacts to this habitat are summarized in Section 4.3-14, including Table 4.3-6. The adverse cumulative effects of existing and foreseeable future projects (not including the proposed project) to American badger and desert kit fox habitat are substantial. Because of the presence of kit fox and badgers on site, and the fact that future projects are planned adjacent to or near the DHSP to the north and south that would also remove habitat and other direct impacts (described for Section 4.4.7), the cumulative impacts to badgers and kit fox in the Chuckwalla Valley would be substantial. The contribution of the proposed project or its alternatives to these impacts would be reduced or offset by implementing mitigation measures described in Section 4.4.7, including Mitigation Measure WIL-7 **(**Desert Kit Fox and American Badger Impact Avoidance).

Nelson's Bighorn Sheep, Burro Deer, and Yuma Mountain Lion. The project site and surrounding valley floor provides marginally suitable foraging habitat that these species may use infrequently for foraging or for movement among surrounding mountain ranges. Cumulative impacts to these habitat values, particularly movement, are substantial (below). The project's contribution to habitat loss and expected off-site impacts such as noise, lighting, and disturbance would be minimized or offset by implementing mitigation measures described in Section 4.4.7. The cumulative impacts to wildlife movement, and the contribution of the proposed project or its alternatives to those impacts, are discussed further, below.

Wildlife Movement and Habitat Connectivity

The solar facility site is located roughly midway between the three mountain ranges that surround the upper Chuckwalla Valley. It is immediately south of the recently approved Desert Sunlight Project site and north of the proposed Silverado Project. Wildlife movement among the mountain ranges surrounding the Chuckwalla Valley is restricted by the Colorado River Aqueduct and large containment berms north of it, the disused Kaiser rail line on the west side of the Valley, and I-10 at the south of the Valley, but north of the Chuckwalla Mountains (see Section 3.4, including Figure 3.4-3 in Appendix A). These existing features restrict movement for all terrestrial species, including desert tortoise. The solar facility site presently contributes to suitable wildlife movement routes through the Valley, particularly for southwest to northeast movement between the Chuckwalla DWMA (west of the site) and the Coxcomb Mountains. Project construction would eliminate movement opportunities across the site for most wildlife species. The project's impacts to wildlife movement would be offset through implementation of Mitigation Measure VEG-6 (Provide Off-Site Compensation for Impacts to Vegetation and Habitat), which requires habitat compensation at a 1:1 ratio to contribute to general wildlife movement and population connectivity for Nelson's bighorn sheep and desert tortoise populations.

In addition to the project's individual impacts, much of the suitable movement habitat in the Chuckwalla Valley north of I-10 would be degraded or eliminated by construction of other approved or proposed projects. At least 6 other large-scale renewable energy projects have been approved or proposed in this portion of the Chuckwalla Valley (see Figure 4.4-1 in Appendix A). Desert Sunlight, now under construction, would largely prevent movement from the DHSP site northward and would eliminate much of the suitable movement habitat north of the DHSP. These new industrial land uses would eliminate habitat and exclude most wildlife from each project site, further restricting wildlife movement in the region. The USFWS (2011b) identifies a series of recently approved projects in the I-10 corridor, and concludes that:

> *The collective effect of these various project approvals has 1) reduced the number of opportunities for desert tortoises to cross the I-10 corridor and maintain landscape-level population connectivity between the Mojave and Colorado portions of the species' range; and 2) likely reduced desert tortoise population densities in portions of the [Desert Sunlight] action area, which reduces the extent of population connectivity to an unknown degree. Consequently, we [USFWS] conclude that the environmental baseline against which the effects of the proposed [Desert Sunlight] project are analyzed include habitat areas have been degraded by existing land uses and will experience additional reductions once projects that have been approved are constructed.*

These impacts to wildlife movement, including connectivity among desert tortoise population and habitat areas, are cumulatively substantial. The USFWS BO for the Desert Sunlight project (2011b) requires acquisition and management of lands within the I-10 corridor as mitigation for that project's impacts to habitat connectivity. The contribution of the proposed project or its alternatives to the cumulative impacts to wildlife movement would be mitigated in part, as described above, including provisions in Mitigation Measure VEG-6 that would require habitat acquisition in the I-10 corridor.

Even with this mitigation, the residual cumulative effects to habitat connectivity within the upper Chuckwalla Valley would be substantial due to the loss of wildlife movement habitat across existing the site and other existing, approved, or foreseeable future project sites. However, the DHSP project site is modeled as low habitat value (Nussear et al. 2009), has low density of tortoises and their sign (Section 3.4), much of the local habitat has been disturbed and fragmented, and the most important desert tortoise movement habitat in the area lies west of the project footprint. Therefore, the contribution of the proposed project or its alternatives would be relatively minor (Section 4.4.7).

Wildlife Management Areas

The development of numerous large-scale projects, such other wind and solar generation facilities, would result in a substantial permanent conversion of desert habitat to industrial/commercial uses. This would result in substantial adverse cumulative impacts to wildlife management areas due to habitat loss from ground disturbance and the direct and indirect off-site impacts described in Section 4.4.7, including noise, lighting, dust, and invasive weeds. The direct effects of the proposed project and alternatives are described in Sections 4.4.4 through 4.4.15. The NECO plan allows for development of 1 percent of the BLM-administered land within the Chuckwalla DWMA (465,287 acres; 1 percent is 4,653 acres). The development of 2 or 4 acres (under Alternatives B/C and D, and E, respectively), would represent a small percentage of the

allowable development within the DWMA (less than 0.01 percent). However, due to the importance of designated DWMAs and CHUs to desert tortoise and other wildlife, even relatively small impacts to these areas are important. According to Mitigation Measure VEG-6, these impacts would be mitigated at a 5:1 compensation ratio and a proportion of this compensation habitat (at least a 1:1 ratio) would be within the I-10 corridor, which also is within the Chuckwalla DWMA and CHU. In consideration of the NECO Plan's limitations on future development within DWMAs the cumulative impacts to these wildlife management areas will not be substantial and the contribution of the project or alternatives to the cumulative habitat loss within these wildlife management areas also would not be substantial.

Under several of the alternatives, the project would create adverse impacts to the Palen-Ford WHMA. The 46 acres of the WHMA that are within the DHSP project site are isolated from the remainder of the WHMA and key WHMA resources, including the dunes and playa system to the east, by the intervening DSSF project now under construction (see Figures 3.1-1 and 3.4-1). The functionality of this portion of the WHMA is thus reduced in the context of the WHMA as a whole. As a result, the effects of the DHSP on this portion of the WHMA would be diminished by its configuration, and the contribution of the project to cumulative impacts on the WHMA would not be substantial.

4.4.17 CEQA Considerations

This section is included in this EIS and CDCA Plan Amendment for future use by CEQA Lead and Responsible agencies and is not required under NEPA.

CEQA Significance Criteria

The significance criteria listed below are from the Environmental Checklist Form in Appendix G of the CEQA Guidelines. They are used to determine whether the proposed project or alternatives would result in significant impacts under CEQA related to wildlife biological resources. The proposed project and alternatives would result in a significant impact related to wildlife biological resources if they would:

WIL-1 Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFG or USFWS;

WIL-2 Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;

WIL-3 Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or

WIL-4 Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan

CEQA Significance Determination

Alternative 1. Under Alternative 1, the DHSP would not be approved by the BLM, and BLM would not amend the CDCA Plan. As a result, the project would not be constructed and BLM

would continue to manage the site consistent with the existing land use designation in the CDCA Plan. It is expected that the site would remain in its existing condition, with no new structures or facilities constructed or operated and no project-related ground disturbance. No significant impacts to wildlife resources would result from Alternative 1. Alternative 1 would not contribute to any significant cumulative impact.

Alternative 2. Under Alternative 2, the proposed DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site available for future solar energy development. As a result, the project would not be constructed and BLM would manage the site consistent with the amended land use designation in the CDCA Plan. Any future project would be reviewed under a separate NEPA analysis. No significant impacts to wildlife resources would result from the DHSP. Alternative 2 would not contribute to any significant cumulative impact to wildlife resources.

Alternative 3. Under Alternative 3, the proposed DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site unavailable for future solar energy development. As a result, the project would not be constructed and BLM would manage the site consistent with the amended land use designation in the CDCA Plan. Any future project would be reviewed under a separate NEPA analysis. No significant impacts to wildlife resources would result from the DHSP. Alternative 2 would not contribute to any significant cumulative impact to wildlife resources.

Alternative 4. Under Alternative 4, the Applicant's proposed project, the direct and indirect impacts of project construction, O&M, and decommissioning to wildlife resources, including wildlife habitat and special-status wildlife species, would be as described in Section 4.4.7. These impacts would be significant under criteria WIL-1 (impacts to special-status wildlife and habitat, including listed threatened or endangered species) and WIL-2 (interfere substantially with the movement of native wildlife species). With implementation of Mitigation Measures VEG-1 through MM VEG-9 and MM WIL-1 through MM WIL-8, these impacts to wildlife resources would be mitigated to less-than-significant levels under CEQA by minimizing habitat impacts to the extent practicable, mitigating direct impacts to special-status wildlife, avoiding impacts to nesting and migratory birds, controlling potential subsidies for ravens or other predators, providing for long-term conservation and management of native habitat on compensation lands, and other actions as described above. Adverse residual impacts (Section 4.4.7) would remain, but would be less than significant and there would be no unavoidable significant impacts under the CEQA criteria.

The cumulative impacts of existing and reasonably foreseeable development to special-status wildlife and habitat (including listed threatened or endangered species), and wildlife movement, are significant within the region (criteria WIL-1 and WIL-2). The individual contributions of Alternative 4 to these cumulative effects would be minor and mitigated in part through mitigation measures described in Sections 4.3.7 and 4.4.7, particularly Mitigation Measures VEG-6 (Provide Off-Site Compensation for Impacts to Vegetation and Habitat). Even with implementation of mitigation, the residual impacts of Alternative 4 would have a cumulatively considerable contribution to significant habitat loss for special-status wildlife species in the NECO planning area, and reduced wildlife movement and connectivity in the upper Chuckwalla Valley. Therefore, cumulative impacts would remain significant and unavoidable under criteria WIL-1 and WIL-2.

There would be no significant impacts, at either the project level or cumulatively, under criteria WIL-3 and WIL-4 because Alternative 4 would be consistent with local plans and policies (i.e., the County of Riverside General Plan), and there are no habitat conservation plans in the project area.

Alternative 5. Since the direct, indirect, and cumulative impacts to wildlife resources for Alternative would be substantially the same as those described for Alternative 4, as explained above, those effects would be mitigated to less-than-significant levels under CEQA. Similarly, Alternative 5 would contribute considerably to the cumulatively significant impacts of habitat loss for special-status wildlife species in the NECO planning area, and reduced wildlife movement and connectivity in the upper Chuckwalla Valley. There would be no significant impacts, at either the project level or cumulatively, under criteria WIL-3 and WIL-4 because Alternative 5 would be consistent with local plans and policies (i.e., the County of Riverside General Plan), and there are no habitat conservation plans in the project area.

Alternative 6. Under Alternative 6, the direct, indirect, and cumulative impacts to wildlife resources would be as described for Alternative 4. The direct and indirect impacts of Alternative 6 would be mitigated to less-than-significant levels under CEQA. However, Alternative 6 would contribute considerably to the cumulatively significant impacts of habitat loss for special-status wildlife species in the NECO planning area, and reduced wildlife movement and connectivity in the upper Chuckwalla Valley. There would be no significant impacts, at either the project level or cumulatively, under criteria WIL-3 and WIL-4 because Alternative 6 would be consistent with local plans and policies (i.e., the County of Riverside General Plan), and there are no habitat conservation plans in the project area.

Alternative 7. Under Alternative 7, the direct, indirect, and cumulative impacts to wildlife resources would be as described for Alternative 4. The direct and indirect impacts of Alternative 7 would be mitigated to less-than-significant levels under CEQA. However, Alternative 7 would contribute considerably to the cumulatively significant impacts of habitat loss for special-status wildlife species in the NECO planning area, and reduced wildlife movement and connectivity in the upper Chuckwalla Valley. There would be no significant impacts, at either the project level or cumulatively, under criteria WIL-3 and WIL-4 because Alternative 6 would be consistent with local plans and policies (i.e., the County of Riverside General Plan), and there are no habitat conservation plans in the project area.

Alternative A. Under Alternative A, no gen-tie line would be approved by the BLM, and BLM would not amend the CDCA Plan. The proposed gen-tie line would not be constructed and BLM would continue to manage the ROW consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended (including the Desert Sunlight amendment). It is expected that the Desert Sunlight gen-tie line would be built within the ROW, and that impacts to vegetation resources would be as described in the Desert Sunlight Solar Farm Project EIS (BLM 2011). No significant impacts to vegetation resources would result from Alternative A. Alternative A would not contribute to any significant cumulative impact, as defined in CEQA.

Alternative B. Under Alternative B, the direct and indirect impacts of gen-tie line construction, operation, and decommissioning to wildlife resources, as described in Section 4.4.12, would be significant under CEQA criterion WIL-1 (impacts to special status wildlife and habitat). With implementation of Mitigation Measures VEG-1 through MM VEG-9 and MM WIL-1 through MM WIL-8, these impacts to wildlife resources would be mitigated to less-than-significant

levels under CEQA by minimizing habitat impacts to the extent practicable, mitigating direct impacts to special-status wildlife, avoiding impacts to nesting and migratory birds, controlling potential subsidies for ravens or other predators, providing for long-term conservation and management of native habitat on compensation lands, and other actions as described above. Adverse residual impacts (described in Section 4.4.7) would remain, but would be less than significant and there would be no unavoidable significant impacts under the CEQA criteria.

Alternative B would not contribute to cumulative wildlife effects, as the cumulative scenario assumes concurrent construction of the Desert Sunlight approved gen-tie and Alternative B conductor stringing using the same crew at the same time, with no additional work required for Alternative B beyond what is required for the Desert Sunlight gen-tie.

There would be no significant impacts, at either the project level or cumulatively, under criteria WIL-3 and WIL-4 because Alternative B would be consistent with local plans and policies (i.e., the County of Riverside General Plan), and there are no habitat conservation plans in the project area.

Alternative C. Under Alternative C, the direct and indirect impacts of gen-tie line construction, operation, and decommissioning to wildlife resources would be as described for Alternative B. The direct and indirect impacts of Alternative C would be mitigated to less-than-significant levels under CEQA. The contribution of Alternative C to cumulative impacts would be greater than for Alternative B, due to its construction on separate structures from the Desert Sunlight gen-tie line. However, this would not be a considerable contribution, in terms of CEQA. There would be no significant impacts, at either the project level or cumulatively, under criteria WIL-3 and WIL-4 because Alternative C would be consistent with local plans and policies (i.e., the County of Riverside General Plan), and there are no habitat conservation plans in the project area.

Alternative D. Under Alternative D, the direct and indirect impacts of gen-tie line construction, operation, and decommissioning to wildlife resources would be as described for Alternative B. The direct and indirect impacts of Alternative D would be mitigated to less-than-significant levels under CEQA. The contribution of Alternative D to cumulative impacts would be greater than for Alternative B, due to its construction of separate support structures for the gen-tie line. However, this would not be a considerable contribution, in terms of CEQA. There would be no significant impacts, at either the project level or cumulatively, under criteria WIL-3 and WIL-4 because Alternative D would be consistent with local plans and policies (i.e., the County of Riverside General Plan), and there are no habitat conservation plans in the project area.

Alternative E. Under Alternative E, the direct and indirect impacts of gen-tie line construction, operation, and decommissioning to wildlife resources would be as described for Alternative B. The direct and indirect impacts of Alternative E would be mitigated to less-than-significant levels under CEQA. The contribution of Alternative E to cumulative impacts would be greater than for Alternative B, due to its construction of separate structures for the gen-tie line. However, this would not be a considerable contribution, in terms of CEQA. There would be no significant impacts, at either the project level or cumulatively, under criteria WIL-3 and WIL-4 because Alternative E would be consistent with local plans and policies (i.e., the County of Riverside General Plan), and there are no habitat conservation plans in the project area.

4.5 CLIMATE CHANGE

4.5.1 Methodology for Analysis

This section addresses the effects of greenhouse gas emissions (GHGs) from the Desert Harvest Solar Project (DHSP), as well as the consistency of the proposed project and alternatives with the applicable plans and programs that have been implemented by various federal, state, and local agencies with jurisdiction over the project area. The CEQ published draft guidance in February 2010 for federal agencies to consider the direct and indirect greenhouse gas emissions from proposals for federal actions under NEPA and to quantify and disclose those emissions in the environmental document (Council on Environmental Quality, Draft NEPA Guidance, dated February 18, 2010). The draft guidance provides practical tools for agency reporting, including a presumptive threshold of 25,000 metric tons of carbon dioxide equivalent (MTCO2e) annual emissions from the proposed project to trigger a quantitative analysis.

Potential GHG emissions from construction and operation, including avoided GHG emissions associated with displaced fossil-fuel fired electricity generation, are estimated quantitatively to evaluate the proposed project and alternatives. Climate change effects are long-term, global, and cumulative in nature. Therefore, the GHG emissions impacts described in this section analyze the potential for long-term cumulative effects.

4.5.2 Applicant Measures

No applicant measures are proposed.

4.5.3 Alternative 1 – No Action (No Plan Amendment)

Under Alternative 1, the proposed DHSP would not be approved by the BLM, and BLM would not amend the CDCA Plan. As a result, no solar energy project would be constructed on the project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no ground disturbance. As a result, effects from the project would not occur.

4.5.4 Alternative 2 – No Project Alternative (with Plan Amendment to Find the Site Suitable for Solar Energy Development)

Under Alternative 2, the proposed DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site available for future solar energy development. As a result, the DHSP would not be constructed on the project site, and BLM would manage the site consistent with the amended land use designation in the CDCA Plan. No effects from the DHSP would occur.

4.5.5 Alternative 3 – No Project Alternative (with Plan Amendment to Find the Site Unsuitable for Solar Energy Development)

Under Alternative 3, the DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site unavailable for future solar energy development. As a

result, the DHSP would not be constructed on the project site and BLM would manage the site consistent with the amended land use designation in the CDCA Land Use Plan. No impacts from the DHSP would occur.

4.5.6 Alternative 4 – Proposed Solar Project

As a solar energy project, the project would have no primary direct CO_2 emissions from electricity production during operation, but direct GHG emissions during operation would result from the use of off-road equipment and on-road vehicles used for inspection and maintenance and possible minor leakage from sulfur hexafluoride (SF_6) containing electrical equipment. The project is likely to avoid GHG emissions due to the displacement of electricity generated by fossil fuel-fired power plants, offset by a small increase in GHG emissions due to the loss of carbon uptake from the removal of vegetation at the project site.

Construction

Direct GHG emissions during construction would be generated from use of off-road equipment (such as graders, cranes, and excavators) and from on-road construction vehicle trips (such as heavy haul trips for solar panels and other construction materials like water and aggregate and cement for concrete production, as well as construction employee commuting).

Direct Effects

Estimated direct construction GHG emissions for the project, including the secondary direct emissions from off-site construction trips, are presented in Table 4.5-1. Detailed assumptions are included in Appendix D.

Table 4.5-1. Total Construction Period CO_2 Emissions, Alternative 4 – Proposed Solar Project

	MTCO2e
On-road Vehicle Emissions	9,454.78
Off-road Construction Equipment Emissions	19,928.21
Total	29,382.99

Source: Aspen Analysis, See Appendix D for detailed modeling assumptions and emission estimates.
Note: The total emissions are for the entire 24-month construction period.

The SCAQMD established an interim GHG threshold that considers construction emissions as amortized over 30 years for the service lifetime of a project. Assuming that the project would serve 30 years, the equivalent annual average GHG emissions over the 30-year project life would be 979.43 MTCO2e/year for construction of the DHSP.

Indirect Effects

There would be no indirect effects associated with Alternative 4 during construction.

Operation and Maintenance

Operation activities would include routine maintenance of the solar farm facilities, washing the solar panels, removing noxious weeds, and roads maintenance. Routine maintenance includes torque electrical fittings, cleaning switch gear, calibrating protective relays, fire protection sys-

tem test and annual certification, and fuse swapping and testing ground fault detection and power quality. In order to perform these operation and maintenance activities, the project would require 16 full-time staff and 4 pickup trucks on-site.

Direct Effects

The estimated direct operation GHG emissions related to Alternative 4, including the emissions from employee trips, on-site truck trips, other maintenance and operation activities, are presented in Table 4.5-2. Also presented in this table is the project life amortized construction GHG emissions and an estimate of the GHG emissions displaced from the electrical production of Alternative 4.

Table 4.5-2. Annual Operation Emissions, Alternative 4 – Proposed Solar Project

	MTCO2e per year
Employee and O&M Vehicle Emissions	522.62
Amortized Construction Emissions	979.43
Total Annualized Direct Emissions	1,502.05
Displaced Annual GHG Emissions	(92,670)
Net Project Annual GHG Emissions	(91,168)

Source: Aspen Analysis, See Appendix D for detailed modeling assumptions and emission estimates.

Total annualized direct GHG emissions are expected to be well below the presumptive threshold for direct emissions of 25,000 MTCO2e/year established in the Council on Environmental Quality's (CEQ's) draft guidance for federal agencies. Therefore, the project would not result in an unavoidable adverse GHG effects.

Indirect Effects

The capacity of Alternative 4 is 150 MW. Based on the project expected generation of over 300,000 MWh annually and a system-wide GHG emission factor of 681 lbs CO2e/MWh for electricity provided by California utilities (USEPA 2011) including SCE, the energy produced by the project would displace 92,670 MTCO2e/year that would otherwise be emitted by power plants currently generating electricity for the California system. Because this would be an indirect effect of the project, the exact nature and location of such reductions is not known, and the magnitude of reductions would diminish over time as the system-wide GHG emission factor would decrease with increased renewable energy in California's generation profile.

The project would cause the clearing of land and removal of vegetation, which would reduce the ongoing natural carbon uptake by vegetation. A study of the Mojave Desert indicated that the desert may uptake carbon in amounts as high as 100 grams per square meter per year (Wohlfahrt et al. 2008). This would equate to a maximum reduction in carbon uptake, calculated as CO_2, of 1.48 MT tons of CO_2 per acre per year for areas with complete vegetation removal. For this project, which would require 1,208 acres of permanently disturbed areas of vegetation removal, the equivalent loss in carbon uptake would be 1,776 MTCO2e/year, which would be negligible in comparison to other effects of the project on CO_2 emissions.

Decommissioning

At the end of the life of Alternative 4, above-ground structures would be removed and demolished, and the site would be returned to its original condition. Required decommissioning activities and equipment would be similar to those for project construction.

Direct Effects

Decommissioning would require removal of the solar panels, towers, and electrical collection system and transporting all components off site. After removal of equipment and facilities, the site would need to be re-vegetated. Equipment used for decommissioning would generally be similar to that used for construction, but the overall activity necessary during decommissioning would be much less than that of construction. Since decommissioning would occur after at least 30 years of operation, it is likely that equipment engine technology would be more advanced and fuels would be cleaner. Therefore, it is anticipated that GHG emissions generated from decommissioning would be similar to or more likely less than those from construction estimated in Table 4.5-1, and the environmental effects of the GHG emissions would be comparable.

Indirect Effects

There would be no indirect effects associated with the project during decommissioning.

Mitigation Measures

Alternative 4 would result in avoided GHG emissions associated with displaced fossil fuel power generation, and GHG emissions associated with facility construction and operations would not cause adverse effects. Accordingly, no climate change/GHG emissions mitigation measures are required.

Residual Impacts and Unavoidable Adverse Effects

Alternative 4 would have no residual impacts and no unavoidable adverse effects related to climate change.

4.5.7 Alternative 5 – Solar Project Excluding WHMA

Alternative 5 would exclude the portion of the site which is within the Palen-Ford Wildlife Habitat Management Area (WHMA). Alternative 5 would encompass 1,161 acres and the areas cleared of vegetation would be the same as for Alternative 4, 107 acres.

Construction

Construction components of Alternative 5 would be identical to those of Alternative 4.

Direct Effects

Alternative 5 would require slightly less construction materials and related truck trips, and possibly slightly fewer construction workers than Alternative 4; however, the difference would be minimal. Therefore, Alternative 5 would generate slightly less GHG emissions, but the GHG/ climate change effects under Alternative 5 would be essentially the same as those effects under Alternative 4.

Indirect Effects

There would be no indirect effects associated with Alternative 5 during construction.

Operation and Maintenance

Operation and maintenance activities under Alternative 5 would be almost identical to those under Alternative 4.

Direct Effects

Similar to Alternative 4, emission sources for Alternative 5 operation would be limited to maintenance activities and vehicles trips required for operation/maintenance. Therefore, operation emissions would be substantially less than construction emissions. GHG/climate change effects during Alternative 5 would be similar to those effects during Alternative 4; therefore operation of Alternative 5 would not result in an unavoidable adverse effect.

Indirect Effects

Similar to Alternative 4, electricity produced by Alternative 5 would displace electricity generated from other power plants currently generating electricity for the California system. Indirect GHG/Climate Change effects during operation of Alternative 5 would be identical to those during operation of Alternative 4.

Decommissioning

Decommissioning under Alternative 5 would be essentially the same as decommissioning under Alternative 4, except that the area that would be re-vegetated would be smaller due to the smaller disturbance acres.

Direct Effects

Required decommissioning activities and equipment under Alternative 5 would be similar to those described under Alternative 4. Alternative 5 would require slightly less equipment use due to the smaller disturbance area subject to re-vegetation during decommissioning. However, the difference would be minimal and effects of Alternative 5 decommissioning would be essentially identical to those of Alternative 4 decommissioning.

Indirect Effects

There would be no indirect effects associated with Alternative 5 during decommissioning.

Mitigation Measures

Similar to Alternative 4, Alternative 5 would result in avoided greenhouse gas emissions associated with displaced fossil fuel power generation, and greenhouse gas emissions associated with facility construction and operations would not cause adverse effects. Accordingly, no climate change/GHG emissions mitigation measures are required.

Residual Impacts and Unavoidable Adverse Effects

Alternative 5 would have no residual impacts and no unavoidable adverse effects related to climate change.

4.5.8 Alternative 6 – Reduced Footprint Solar Project

Alternative 6 would exclude the 155-acre southern parcel of the project as well as some minor portions of the northern parcel where sensitive plants are located. Alternative 6 would encompass 1,044 acres and the areas cleared of vegetation would be slightly less than those for Alternative 4.

Construction

Construction components of Alternative 6 would be identical to those of Alternative 4.

Direct Effects

Alternative 6 would require slightly less construction materials and related truck trips, and possibly slightly fewer construction workers than Alternative 4; however, the difference would be minimal. Therefore, Alternative 6 would generate slightly less GHG emissions, but the GHG/climate change effects under Alternative 6 would be essentially the same as those effects under Alternative 4.

Indirect Effects

There would be no indirect effects associated with Alternative 6 during construction.

Operation and Maintenance

Operation and maintenance activities under Alternative 6 would be almost identical to those under Alternative 4.

Direct Effects

Similar to Alternative 4, emission sources for Alternative 6 operation would be limited to maintenance activities and vehicles trips required for operation/maintenance. Therefore, operation emissions would be substantially less than construction emissions. GHG/climate change effects during Alternative 6 would be similar to those effects during Alternative 4; therefore operation of Alternative 6 would not result in an unavoidable adverse effect.

Indirect Effects

Similar to Alternative 4, electricity produced by Alternative 6 would displace electricity generated from other power plants currently generating electricity for the California system. Indirect GHG/climate change effects during operation of Alternative 6 would be similar to those during operation of Alternative 4.

Decommissioning

Decommissioning under Alternative 6 would be essentially the same as decommissioning under Alternative 4, except that the area that would require re-vegetation would be smaller due to the smaller disturbance acres.

Direct Effects

Required decommissioning activities and equipment under Alternative 6 would be similar to those described under Alternative 4. Alternative 6 would require slightly less equipment use due to the smaller disturbance area subject to re-vegetation during decommissioning. However, the difference would be minimal and effects of Alternative 6 decommissioning would be essentially identical to those of Alternative 4 decommissioning.

Indirect Effects

There would be no indirect effects associated with Alternative 6 during decommissioning.

Mitigation Measures

Similar to Alternative 4, Alternative 6 would result in avoided greenhouse gas emissions associated with displaced fossil fuel power generation, and greenhouse gas emissions associated with facility construction and operations would not cause adverse effects. Accordingly, no climate change/GHG emissions mitigation measures are required.

Residual Impacts and Unavoidable Adverse Effects

Alternative 6 would have no residual impacts and no unavoidable adverse effects related to climate change.

4.5.9 Alternative 7 – High-Profile Reduced Footprint Solar Project

Alternative 7 would be constructed within the same project boundaries as Alternative 6. Alternative 7 would encompass an estimated 1,044 acres and would be an estimated 150 MW nominal capacity project. Project details are the same as for Alternative 4, with the only exception being the overall height of the panels for Alternative 7. Alternative 7 would use high-profile single-axis tracking panels that would have a total height of 15 feet.

Construction

Construction components of Alternative 7 would be identical to those of Alternative 4.

Direct Effects

Alternative 7 would require slightly less construction materials and related truck trips, and possibly slightly fewer construction workers than Alternative 4; however, the difference would be minimal. Therefore, Alternative 7 would generate slightly less GHG emissions, but the GHG/climate change effects under Alternative 7 would be essentially the same as those effects under Alternative 4.

Indirect Effects

There would be no indirect effects associated with Alternative 7 during construction.

Operation and Maintenance

Operation and maintenance activities under Alternative 7 would be almost identical to those under Alternative 4.

Direct Effects

Similar to Alternative 4, emission sources for Alternative 7 operation would be limited to maintenance activities and vehicles trips required for operation/maintenance. Therefore, operation emissions would be substantially less than construction emissions. GHG/climate change effects during Alternative 7 would be similar to those effects during Alternative 4; therefore operation of Alternative 7 would not result in an unavoidable adverse effect.

Indirect Effects

Similar to Alternative 4, electricity produced by Alternative 7 would displace electricity generated from other power plants currently generating electricity for the California system. Indirect GHG/climate change effects during operation of Alternative 7 would be similar to those during operation of Alternative 4.

Decommissioning

Decommissioning under Alternative 7 would be essentially the same as decommissioning under Alternative 4, except that the area that would require re-vegetation would be smaller due to the smaller disturbance acres.

Direct Effects

Required decommissioning activities and equipment under Alternative 7 would be similar to those described under Alternative 4. Alternative 7 would require slightly less equipment use due to the smaller disturbance area subject to re-vegetation during decommissioning. However, the difference would be minimal and effects of Alternative 7 decommissioning would be essentially identical to those of Alternative 4 decommissioning.

Indirect Effects

There would be no indirect effects associated with Alternative 7 during decommissioning.

Mitigation Measures

Similar to Alternative 4, Alternative 7 would result in avoided greenhouse gas emissions associated with displaced fossil fuel power generation, and greenhouse gas emissions associated with facility construction and operations would not cause adverse effects. Accordingly, no climate change/GHG emissions mitigation measures are required.

Residual Impacts and Unavoidable Adverse Effects

Alternative 7 would have no residual impacts and no unavoidable adverse effects related to climate change.

4.5.10 Alternative A – No Gen-Tie

Under Alternative A, no gen-tie line would be constructed or operated as part of the proposed project. Therefore, no climate change/GHG effects related to construction, operations and maintenance, or decommissioning would occur.

Mitigation Measures

No mitigation measures for climate change/GHG effects are required for Alternative A.

Residual Impacts and Unavoidable Adverse Effects

No climate change/GHG residual impacts or unavoidable adverse effects would result from the implementation of Alternative A.

4.5.11 Alternative B – Proposed Gen-Tie (Shared Towers)

Alternative B would utilize transmission infrastructure developed for First Solar's Desert Sunlight Solar Farm Project (DSSF) by sharing the approved transmission towers. Stringing of the Applicant's gen-tie line would commence in October 2012 and be completed in February 2013. However, since this construction had not yet begun in September 2011, this analysis assumes that Alternative B would require all related construction activities.

Construction

Construction of Alternative B would cause both temporary and permanent disturbance within a construction corridor estimated at a width of 160 feet, plus additional fan-shaped areas at each turn in the alignment with radii of 450 feet needed for wire stringing. The permanent disturbance associated with Alternative B would be limited to the foundations of the transmission structures, the footprint of the access road, and two 75-foot-by-200-foot areas associated with each fan-shaped stringing area, as described previously.

Direct Effects

Estimated direct construction GHG emissions for Alternative B, including the secondary direct emissions from off-site construction trips, are presented in Table 4.5-3. Detailed assumptions are included in Appendix D.

Table 4.5-3. Total Construction Period CO_2 Emissions, Alternative B – Proposed Gen-Tie (Shared Towers)

	MTCO2e
On-road Vehicle Emissions	940.74
Off-road Construction Equipment Emissions	351.19
Total	1,291.93

Source: Aspen Analysis, See Appendix D for detailed modeling assumptions and emission estimates.
Note: The total emissions are for the entire construction duration.

Assuming that the project would serve 30 years, the annual average GHG emissions over the 30-year project life would be 43.06 MTCO2e/year.

Indirect Effects

There would be no indirect effects associated with Alternative B during construction.

Operation and Maintenance

DHSP operations and maintenance personnel would perform periodic maintenance of the gen-tie line, and no additional personnel would be required. Operation and maintenance of the proposed project gen-tie line would involve periodic inspection via helicopter or truck. The transmission lines would be maintained on an as-needed basis and would include maintenance of access roads and erosion/drainage control structures.

Direct Effects

No additional personnel or equipment would be required for Alternative B; therefore no additional impacts other than those operation and maintenance impacts described for Alternative 4 would occur.

Indirect Effects

No additional personnel or equipment would be required for Alternative B; therefore no additional impacts would other than those operation and maintenance impacts described for Alternative 4 occur.

Decommissioning

At the end of the life of Alternative B, equipment and facilities would be removed and demolished, and the site would be returned to its original condition.

Direct Effects

Equipment used for decommissioning would generally be similar to that used for construction. Because decommissioning would occur after serving at least 30 years, it is likely that equipment engine technology would be more advanced and fuel would be cleaner. Therefore, GHG emissions during decommissioning of the proposed gen-tie would be significantly less than the GHG emissions associated with its construction.

Indirect Effects

There would be no indirect effects associated with Alternative B during decommissioning.

Mitigation Measures

By providing transmission infrastructure for production of renewable energy, Alternative B would result in avoided GHG emissions associated with displaced fossil fuel power generation. GHG emissions associated with gen-tie construction and operations would not cause adverse effects. Accordingly, no climate change/GHG emissions mitigation measures are required.

Residual Impacts and Unavoidable Adverse Effects

Alternative B would have no residual impacts and no unavoidable adverse effects related to climate change.

4.5.12 Alternative C – Separate Transmission Towers within Same ROW

The Alternative C gen-tie line would parallel the approved Desert Sunlight gen-tie line, and would be located on separate towers within the same ROW. The same number of towers in a nearly identical alignment to that of First Solar's tower would be constructed. Construction, operation, and maintenance of Alternative C would be identical to that for Alternative B, except for some additional ground disturbance required for the new tower locations, pulling stations, and dead-end poles.

Construction

Construction activities required under Alternative C would be essentially the same as those required under Alternative B.

Direct Effects

Under Alternative C, construction equipment usage would be identical to Alternative B.

Indirect Effects

There would be no indirect effects associated with Alternative C during construction.

Operation and Maintenance

DHSP operations and maintenance personnel would perform periodic maintenance of the gen-tie line, and no additional personnel would be required. Operation and maintenance of the proposed project gen-tie line would involve periodic inspection via helicopter or truck. The transmission lines would be maintained on an as-needed basis and would include maintenance of access roads and erosion/drainage control structures.

Direct Effects

No additional personnel or equipment would be required for Alternative C; therefore no additional impacts other than those operation and maintenance impacts described for Alternative 4 would occur.

Indirect Effects

No additional personnel or equipment would be required for Alternative C; therefore no additional impacts other than those operation and maintenance impacts described for Alternative 4 would occur.

Decommissioning

Decommissioning under Alternative C would be essentially the same as decommissioning under Alternative B, except for removal of the new towers proposed as a part of Alternative C.

Direct Effects

Required decommissioning activities and equipment under Alternative C would be similar to those described under Alternative B, except for additional equipment for disassembly of the new towers proposed under Alternative C. Therefore climate change/GHG effects during Alternative C decommissioning would also be slightly more than decommissioning effects under Alternative B.

Indirect Effects

There would be no indirect effects associated with Alternative C during decommissioning.

Mitigation Measures

Similar to Alternative B, Alternative C would result in avoided GHG emissions associated with displaced fossil fuel power generation, and GHG emissions associated with gen-tie construction and operations would not cause adverse effects. Accordingly, no climate change/GHG emissions mitigation measures are required.

Residual Impacts and Unavoidable Adverse Effects

Alternative C would have no residual impacts and no unavoidable adverse effects related to climate change.

4.5.13 Alternative D – Cross-Valley Alignment

Construction, operation, and maintenance of gen-tie line under Alternative D would be identical to that of gen-tie line under Alternative C, except it would require slightly less temporary and permanent ground disturbance.

Construction

Construction activities required under Alternative D would be essentially the same as those required under Alternative C.

Direct Effects

Under Alternative D, construction equipment usage would be essentially the same as Alternative C. Therefore effects associated with climate change/GHG under Alternative D would be similar to those effects under Alternative C.

Indirect Effects

There would be no indirect effects associated with Alternative D during construction.

Operation and Maintenance

DHSP operations and maintenance personnel would perform periodic maintenance of the gen-tie line, and no additional personnel would be required. Operation and maintenance of the proposed project gen-tie line would involve periodic inspection via helicopter or truck. The transmission lines would be maintained on an as-needed basis and would include maintenance of access roads and erosion/drainage control structures.

Direct Effects

No additional personnel or equipment would be required for Alternative D; therefore no additional impacts other than those operation and maintenance impacts described for Alternative 4 would occur.

Indirect Effects

No additional personnel or equipment would be required for Alternative D; therefore no additional impacts other than those operation and maintenance impacts described for Alternative 4 would occur.

Decommissioning

Decommissioning under Alternative D would be essentially the same as decommissioning under Alternative C.

Direct Effects

Required decommissioning activities and equipment under Alternative D would be similar to those described under Alternative C; therefore, climate change/GHG effects during Alternative D decommissioning would also be similar to decommissioning effects under Alternative C.

Indirect Effects

There would be no indirect effects associated with Alternative D during decommissioning.

Mitigation Measures

Similar to Alternative B, Alternative D would result in avoided emissions associated with displaced fossil fuel power generation, and emissions associated with gen-tie construction and operations would not cause adverse effects. Accordingly, no climate change/GHG emissions mitigation measures are required.

Residual Impacts and Unavoidable Adverse Effects

Alternative D would have no residual impacts and no unavoidable adverse effects related to climate change.

4.5.14 Alternative E – New Cross-Valley Alignment

Construction, operation, and maintenance of gen-tie line under Alternative E would be similar to that of gen-tie line under Alternative C, except it would require slightly less temporary and permanent ground disturbance.

Construction

Construction activities required under Alternative E would be essentially the same as those required under Alternative C.

Direct Effects

Under Alternative E, construction equipment usage would be essentially the same as Alternative B. Therefore effects associated with climate change/GHG under Alternative E would be similar to those effects under Alternative C.

Indirect Effects

There would be no indirect effects associated with Alternative E during construction.

Operation and Maintenance

DHSP operations and maintenance personnel would perform periodic maintenance of the gen-tie line, and no additional personnel would be required. Operation and maintenance of the proposed project gen-tie line would involve periodic inspection via helicopter or truck. The transmission lines would be maintained on an as-needed basis and would include maintenance of access roads and erosion/drainage control structures.

Direct Effects

No additional personnel or equipment would be required for Alternative E; therefore no additional impacts other than those operation and maintenance impacts described for Alternative 4 would occur.

Indirect Effects

No additional personnel or equipment would be required for Alternative E; therefore no additional impacts other than those operation and maintenance impacts described for Alternative 4 would occur.

Decommissioning

Decommissioning under Alternative E would be essentially the same as decommissioning under Alternative C.

Direct Effects

Required decommissioning activities and equipment under Alternative E would be similar to those described under Alternative C; therefore, GHG/climate change effects during Alternative E decommissioning would also be similar to decommissioning effects under Alternative C.

Indirect Effects

There would be no indirect effects associated with Alternative E during decommissioning.

Mitigation Measures

Alternative E would result in avoided GHG emissions associated with displaced fossil fuel power generation, and GHG emissions associated with gen-tie construction and operations would not cause adverse effects. Accordingly, no climate change/GHG emissions mitigation measures are required.

Residual Impacts and Unavoidable Adverse Effects

Alternative E would have no residual impacts and no unavoidable adverse effects related to climate change.

4.5.15 Cumulative Effects

It is generally agreed within the scientific community that increasing atmospheric concentrations of GHGs can cause changes to current global climate conditions, which could include changes to the local climate at the project site. The specific nature of any localized climate change cannot

be reasonably predicted but could include increases or decreases in temperature and rainfall, the increase in severe weather events, or otherwise cause changes to the local climatology. According to the Cal Adapt (2011) interactive modeling tool, temperatures in the Desert Center area are expected to increase by approximately 3 °F under low emissions scenario and approximately 7 °F under high emissions scenario on average by the end of the century.

Table 4.5-4. Cumulative Projects within the Geographic Scope of Cumulative Analysis

Resource Area / BLM Program Area	Geographic Area of Consideration	Elements to Consider	BLM Authorized and Other Known County Projects/Actions/Activities
Climate Change	International, global	CO2e	Global Cumulative Impacts

This entire GHG effects assessment is a cumulative effect assessment, as it is currently impossible to link specific GHG emissions or sequestration to any specific environmental effects associated with climate change. Therefore, there is no link between project-level GHG emissions and direct localized effects. Several global and regional effects are generally attributed to increased temperatures associated with increased atmospheric GHG concentrations. The effects that have been observed or projected in California include a decrease in snowpack, sea level rise, more extreme heat days per year, more high ozone days, increased frequency and intensity of wildfires, and more drought years, with impacts on agriculture, water resources, changes in disease vectors, and changes in habitat and biodiversity.

Construction and operation of Alternatives 4 through 7 and C through E would emit GHGs and, therefore, have been analyzed as a source of potential cumulative effects in the context of long term global and regional effects of climate change and existing GHG regulatory requirements and GHG energy policies. However, the broad integration of renewable energy produced by the proposed project and other renewable energy development in the project area would allow displacement of fossil fuel use for electricity generation, which would avoid GHG emissions that otherwise would occur. Thus, the Proposed Action would not be likely to contribute to adverse cumulative GHG effects considering the indirect emission reduction resulted from the Proposed Action.

The No Action and No Project Alternatives (Alternatives 1, 2, 3, and A) would not contribute to any cumulative effects. In addition, Alternative B would not contribute to cumulative GHG effects, as the cumulative scenario assumes concurrent construction of the Desert Sunlight approved gen-tie and Alternative B conductor stringing using the same crew at the same time, with no additional work required for Alternative B beyond what is required for the Desert Sunlight gen-tie.

4.5.16 CEQA Considerations

CEQA Significance Criteria

The indicators listed below were used to determine whether the project's GHG emissions would be significant under CEQA. These indicators are based on the significance criteria for air quality listed in the CEQA Environmental Checklist, Appendix G of the CEQA Guidelines. Under CEQA, the proposed project would have a significant impact on climate change if it would:

GHG-1 Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment

GHG-2 Conflict with an applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs

The SCAQMD adopted an interim GHG significance threshold of 10,000 MTCO2e/year for industrial projects, with a project's construction emissions added after being amortized over 30 years or the project life (SCAQMD 2008).

CEQA Significance Determination

Evaluation of CEQA significance for climate change/GHG, which encompasses long-term global and regional impacts, is based on the effects of the entire project from construction through decommissioning. The analysis for GHG is cumulative in nature because individual development projects contribute to the cumulative effects of climate change by emitting GHGs during construction and operational phases.

Alternative 1. Under Alternative 1, the proposed DHSP would not be approved by the BLM, and BLM would not amend the CDCA Plan. As a result, no solar energy project would be constructed at the project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no ground disturbance. As a result, impacts from project-related climate change/GHG would not occur.

Alternative 2. Under Alternative 2, the proposed DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site available for future solar energy development. As a result, the DHSP would not be constructed on the project site and BLM would manage the site consistent with the amended land use designation in the CDCA Land Use Plan. No impacts from the DHSP would occur.

Alternative 3. Under Alternative 3, the proposed DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site unavailable for future solar energy development. As a result, the DHSP would not be constructed on the project site and BLM would manage the site consistent with the amended land use designation in the CDCA Land Use Plan. No impacts from the DHSP would occur.

Alternative 4. Alternative 4 would cause direct GHG emissions well below the threshold of CEQA significance of 10,000 MTCO2e/year for industrial projects (as in Table 4.5-2), not including the avoided emissions from the electrical sector that will be enabled by the project's operation. The project as a whole will enable GHG emission reductions within the electricity generation sector; therefore, the impacts of the project, including the effects of avoided emissions, would be less than significant (CEQA significance criterion GHG-1).

As a solar power project, the project would fulfill a portion of the renewable portfolio that is mandated for California and reflected in the CARB AB 32 Scoping Plan and the Governor's Executive Order S-14-08, partially satisfying the goals of the California Renewable Energy Programs (as described above in Climate Change Policies and Regulations). Therefore, the project

would conform to applicable plans, policies, and regulations related to GHG emission reductions, and this project impact would be less than significant (CEQA significance criterion GHG-2).

Alternative 5. Under Alternative 5 the solar facility would be constructed the same as Alternative 4, however, project components would be excluded from the WHMA. This represents a very small portion of the site. Therefore, climate change/GHG impacts and CEQA significance conclusions for criteria GHG-1 and GHG-2 regarding construction, operation, and decommissioning would essentially be the identical to Alternative 4, discussed above.

Alternative 6. Under Alternative 6 the solar facility would be constructed the same as Alternative 4, however, the project would be reduced in size to avoid sensitive plant species. This represents a small portion of the site. Therefore, climate change/GHG impacts and CEQA significance conclusions for criteria GHG-1 and GHG-2 regarding construction, operation, and decommissioning would essentially be the identical to Alternative 4, discussed above.

Alternative 7. Under Alternative 7 the solar facility would be constructed the same as Alternative 4, however, the project would be reduced in size to within the same project boundaries as Alternative 6 and would use high-profile single-axis tracking panels that would have a total height of 15 feet. This represents a small portion of the site. Therefore, climate change/GHG impacts and CEQA significance conclusions for criteria GHG-1 and GHG-2 regarding construction, operation, and decommissioning would essentially be the identical to Alternative 4, discussed above.

Alternative A. Under Alternative A, no gen-tie line would be constructed or operated as part of the DHSP. Therefore, no climate change/GHG impacts under criteria GHG-1 and GHG-2 related to construction, operations and maintenance, or decommissioning would occur.

Alternative B. Alternative B would cause direct GHG emissions well below the threshold of CEQA significance of 10,000 MTCO2e/year for industrial projects, not including the avoided emissions from the electrical sector that will be enabled by the project's operation. The project as a whole will enable GHG emission reductions within the electricity generation sector; therefore, the impacts of the project, including the effects of avoided emissions, would be less than significant (CEQA significance criterion GHG-1).

As the gen-tie line for a solar power project, the project would fulfill a portion of the renewable portfolio that is mandated for California and reflected in the CARB AB 32 Scoping Plan and the Governor's Executive Order S-14-08, partially satisfying the goals of the California Renewable Energy Programs (as described above in Climate Change Policies and Regulations). Therefore, the project would conform to applicable plans, policies, and regulations related to GHG emission reductions, and this project impact would be less than significant (CEQA significance criterion GHG-2).

Alternative C. Construction and operation activity presented previously for the gen-tie line under Alternative B would apply equally to construction activity under Alternative C. Therefore, climate change/GHG impacts and CEQA significance conclusions for criteria GHG-1 and GHG-2 regarding construction, operation, and decommissioning would essentially be the identical to Alternative B, discussed above.

Alternative D. Construction and operation activity presented previously for the gen-tie line under Alternative B would apply equally to construction activity under Alternative D. Therefore, climate change/GHG impacts and CEQA significance conclusions for criteria GHG-1 and GHG-2 regarding construction, operation, and decommissioning would essentially be the identical to Alternative B, discussed above.

Alternative E. Construction and operation activity presented previously for the gen-tie line under Alternative B would apply equally to construction activity under Alternative E. Therefore, climate change/GHG impacts and CEQA significance conclusions for criteria GHG-1 and GHG-2 regarding construction, operation, and decommissioning would essentially be the identical to Alternative B, discussed above.

Cumulative Impacts

Cumulative impacts are described in Section 4.5.15. As discussed therein, the contribution of the proposed project and alternatives to a cumulative GHG impact would be less than considerable under CEQA.

4.6 CULTURAL RESOURCES

4.6.1 Methodology for Analysis

This section analyzes potential impacts from the construction, operation and maintenance, and closure and decommissioning of the DHSP related to cultural resources. The potential for impacts to cultural resources depends on whether such resources are present and whether they would be encountered during project activities. Cultural resources include materials (e.g., artifacts, structures, or land modifications) that reflect the history of human development as well as places that are valued by Native Americans or local national/ethnic groups.

This analysis evaluates the structural and cultural evidence of human development in the vicinity of the project site and requires appropriate mitigation measures to avoid or reduce impacts to significant historic properties (cultural resources listed on or eligible for listing on the National Register of Historic Places [NRHP]) and the California Register of Historic Resources (CRHR) in the event of project-related disturbance. Prehistoric, ethnographic and historic resources are considered in this assessment.

The basic regulatory process for assessing impacts related to cultural resources consists of five steps:

- Determining the appropriate geographic extent of the analysis for the Proposed Action and for each alternative action under consideration;
- Conducting an inventory of historic properties within each such geographic area;
- Determining the historical significance of the historic property identified in the inventory for each geographic area;
- Assessing the effects of the proposed and alternative actions on historic properties; and
- Developing measures to resolve those effects.

Further details of each of these phases follow below and help provide the parameters of the present analysis.

Area of Potential Effects. Section 106 of the National Historic Preservation Act (NHPA), and its implementing regulations at 36 CFR 800, define the Area of Potential Effects (APE) as the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if such properties exist. The APE is influenced by the scale and nature of the undertaking and may be different for different kinds of effects caused by the undertaking (36 CFR 800.16(d)). For purposes of complying with Section 106, the APE for the project consists of the following:

- For archaeological resources (both historic and prehistoric), the APE for direct effects is defined as the area included within the ROW grant for the DHSP (including the solar facility and associated on-site infrastructure, roads, and transmission lines). This includes the maximum depth that would be reached by all foundation excavations and by all pipeline installation trenches, as described in detail in Section 2.4.3.
- The indirect effects APE identifies historic properties whose settings could be adversely affected by industrial development. Visual, auditory, and atmospheric effects from the pro-

posed project are considered in this analysis. The indirect effects APE is defined as encompassing a radius of five miles surrounding the proposed project.

- The APE for ethnographic resources is often identified in consultation with Native Americans and other ethnic groups. These resources may include properties to which Indian Tribes attach religious or cultural significance. Direct effects and indirect effects, including visual, auditory, and atmospheric effects, to these resources are considered in this analysis. For the DHSP, the ethnographic APE includes both the direct and indirect APE.

Archaeological Resources Inventory. The records search for the DHSP included collecting information about all known cultural resources within the direct effects APE plus a one-mile buffer. In addition to archival and online research, sources checked included:

- The Eastern Information Center (EIC) of the California Historical Resources Information System (CHRIS);
- Previously documented cultural resources or archaeological studies in the project area;
- National Register of Historic Places (NRHP);
- California Register of Historical Resources (CRHR);
- California State Historical Landmarks;
- California Points of Historical Interest;
- California Inventory of Historic Resources;
- BLM Field Office files;
- Local historical societies, museums and research institutions; and
- BLM Cultural Areas of Critical Environmental Concern (ACEC) files.

Pedestrian surveys of the direct effects APE also were conducted. Results of the cultural records search and inventory work are provided in Section 3.6, Cultural Resources. Some portions of Alternative D and Alternative E that are on privately owned land have not been subject to the Class III survey. The remaining unsurveyed land in Alternative D totals 98.3 acres, about 43.5 percent of the Alternative corridor and 3.9 percent of the total project APE. The remaining unsurveyed land in Alternative E totals 7.04 acres, about 2.8 percent of the Alternative corridor and less than 1 percent of the total project APE. All other portions of the DHSP APE, including the built environment and the indirect effects study have been completed and incorporated into this Final EIS.

Assessing Effects. The core of a cultural resources analysis under NEPA and Section 106 is the assessment of the character of the effects that a proposed or alternative action may have on historical properties (cultural resources listed on or eligible for listing on the NRHP). The analysis takes into account direct, indirect, and cumulative effects to historic properties.

In accordance with 36 CFR 800.5, which describes criteria for adverse effects, effects on historic properties are considered adverse if one or more of the following conditions would result from implementation of the Proposed Action:

- An undertaking has an effect on a historic property when the undertaking may alter characteristics that qualify the property for inclusion in the NRHP. For the purpose of determining the type of effect, alteration to features of a property's location, setting, or use may be relevant, depending on the property's significant characteristics, and should be considered.

- An undertaking is considered to have an adverse effect when the effect on a historic property may diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Adverse effects on historic properties include, but are not limited to:
  - Physical destruction, damage, or alteration of all or part of the property;
  - Isolation of the property from or alteration of the character of the property's setting when that character contributes to the property's qualification for the NRHP;
  - Introduction of visual, audible, or atmospheric elements that are out of character with the property or that alter its setting;
  - Neglect of the property, resulting in its deterioration or destruction; and
  - Transfer, lease, or sale of the property.

Consideration is given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the NRHP. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance, or be cumulative. A formal finding of effect under Section 106 is made for the proposed undertaking as a whole rather than for individual resources affected by the undertaking.

Under NEPA, direct and indirect effects are those that are more clearly and immediately attributable to the implementation of proposed or alternative actions. Direct effects are those "which are caused by the [proposed or alternative] action and [which] occur at the same time and place" (40 CFR 1508.8(a)). Direct impacts to cultural resources are caused by project development, construction, and co-existence. Indirect effects are those "which are caused by the [proposed or alternative] action and are later in time or farther removed in distance, but are still reasonably foreseeable" (40 CFR 1508.8(b)).

The NHPA Section 106 regulations narrow the range of direct effects and broaden the range of indirect effects relative to the definitions of the same terms under NEPA. Under the NHPA, the term "effect" "means alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register" (36 CFR 800.16(i)). In practice, a "direct effect" under Section 106 is limited to the direct physical disturbance of a historic property. Effects that are immediate but not physical in character, such as visual, auditory, or atmospheric intrusions, and reasonably foreseeable effects that may occur at some point subsequent to the implementation of the proposed undertaking are referred to in the Section 106 process as "indirect effects."

Adverse effects on historic properties are typically considered permanent as these resources are finite and disturbance of them, particularly archaeological sites, cannot be reversed. However, indirect effects to historic properties can be temporary if projects do not permanently impact associated resources and are removed at a future date.

Each action alternative would directly impact cultural resources that are potentially eligible for listing on the California Register of Historical Resources (CRHR) and the NRHP. Table 4.6-1 summarizes the resources affected by each action alternative.

Table 4.6-1 Comparison of Known Cultural Resources within Action Alternatives

	Direct			Indirect		
Alt	Resources Identified	Determinations of Eligibility	Adverse Effects	Resources Identified	Determinations of Eligibility	Adverse Effects
4	1 (prehistoric)	1 determined not eligible	None	3 prehistoric 17 historic	6 determined eligible 2 contributors to districts 2 NRHP/CRHR listed 10 determined not eligible	1 historic district
5	1 (prehistoric)	1 determined not eligible	None	3 prehistoric 17 historic	6 determined eligible 2 contributors to districts 2 NRHP/CRHR listed 10 determined not eligible	1 historic district
6	1 (prehistoric)	1 determined not eligible	None	3 prehistoric 17 historic	6 determined eligible 2 contributors to districts 2 NRHP/CRHR listed 10 determined not eligible	1 historic district
7	1 (prehistoric)	1 determined not eligible	None	3 prehistoric 17 prehistoric	6 determined eligible 2 contributors to districts 2 NRHP/CRHR listed 10 determined not eligible	1 historic district
B/C	28 total 4 prehistoric 16 historic 2 multicomponent 6 unknown	1 determined eligible 7 assumed eligible 7 not evaluated 9 determined not eligible 4 recommended not eligible	8 resolve through MOA 7 avoid through MOA	3 prehistoric 17 historic	6 determined eligible 2 contributors to districts 2 NRHP/CRHR listed 10 determined not eligible	1 prehistoric district 1 prehistoric trail 1 historic district
D	6 (all historic)	1 determined eligible 3 not evaluated 2 determined not eligible	1 resolve through MOA 3 avoid through MOA	3 prehistoric 17 historic	6 determined eligible 2 contributors to districts 2 NRHP/CRHR listed 10 determined not eligible	1 prehistoric district 1 prehistoric trail 1 historic site 1 historic district
E	8 (all historic)	1 not evaluated 6 determined not eligible 1 recommended not eligible	2 avoid through MOA	3 prehistoric 17 historic	6 determined eligible 2 contributors to districts 2 NRHP/CRHR listed 10 determined not eligible	1 prehistoric district 1 prehistoric trail 1 historic district

4.6.2 Applicant Measures

The Applicant has proposed a single measure to minimize impacts to cultural resources: that a cultural resources monitoring and mitigation plan will be included as a DHSP design feature. The plan will include a description of areas to be monitored during construction, a discovery plan that will address post-review discoveries and unanticipated effects, and provisions for the education of construction workers. The Applicant Measure (AM) has been incorporated as a design feature of the proposed project (and all action alternatives) and shall be implemented to reduce adverse impacts associated with the project.

In some cases, mitigation measures further clarify or expand on AM reporting requirements, timing of implementation, or other details where appropriate. Where there is a conflict between

provisions of the mitigation measures imposed and the following AM, the mitigation measures take precedence.

AM CULT-1 Monitoring and Mitigation Plan. A cultural resources monitoring and mitigation plan will be prepared for the project. The plan will include a description of areas to be monitored during construction, a discovery plan that will address unanticipated cultural resources, and provisions for the education of construction workers. Responsible parties for mitigation measures will be identified.

4.6.3 Alternative 1 – No Action (No Plan Amendment)

Under Alternative 1, the proposed DHSP would not be approved by the BLM, and BLM would not amend the CDCA Plan. As a result, no solar energy project would be constructed on the proposed project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no ground disturbance. As a result, impacts would not occur.

4.6.4 Alternative 2 – No Project Alternative (with Plan Amendment to Find the Site Suitable for Solar Energy Development)

Under Alternative 2, the proposed DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site available for future solar energy development. As a result, the DHSP would not be constructed on the project site and BLM would manage the site consistent with the amended land use designation in the CDCA Land Use Plan. No impacts from the DHSP would occur.

4.6.5 Alternative 3 – No Project Alternative (with Plan Amendment to Find the Site Unsuitable for Solar Energy Development)

Under Alternative 3, the proposed DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site unavailable for future solar energy development. As a result, the DHSP would not be constructed on the project site and BLM would manage the site consistent with the amended land use designation in the CDCA Land Use Plan. No impacts from the DHSP would occur.

4.6.6 Alternative 4 – Proposed Solar Project

Under Alternative 4, the proposed DHSP would be approved by BLM, and the BLM would amend the CDCA Plan to make the proposed site available for future solar energy developments. A 150 megawatt solar generating facility would then be built on two parcels, the northern parcel consisting of 1,052 acres and the southern parcel consisting of 155 acres. Alternative 4 would have a direct effect on one prehistoric archaeological site (AE-2326-1, NRHP-ineligible) and an indirect adverse effect on the DTC/C-AMA. In addition, the geologic unit underlying these two parcels consists primarily of recent age alluvial deposits resulting in a low to moderate potential that these landforms contain unidentified archaeological sites that could be adversely affected.

Construction

Direct Effects

Construction of Alternative 4 would require clearing and grading that would directly affect archaeological sites, built environment resources, and proposed historic landscapes by damaging and displacing artifacts and features, resulting in loss of information about history and prehistory, construction of modern elements out of character with a possible historic setting, and degrading the preservation value of these resources. The geologic units present at the site have a low to moderate potential to contain buried archaeological sites. The physical disturbance of the geologic units present at the site during construction of the solar facility could directly affect any archaeological sites that might be present. Physical disturbance of NRHP-eligible sites would constitute a significant impact under NEPA. Therefore, the potential for adverse direct effects on cultural resources is moderate.

Mitigation Measure (MM) CUL-1 (Memorandum of Agreement) clarifies that a Memorandum of Agreement (MOA) shall be developed and that it shall govern the resolution of any adverse effects on historic properties; MM CUL-2 (Project Cultural Resources Staff) would require a qualified cultural resources specialist to be retained by the project owner to develop and implement the Monitoring and Treatment Plan; MM CUL-3 (Monitoring and Treatment Plan) would require the development and implementation of a plan to guide all project cultural resources work; MM CUL-4 (Authority to Halt) would ensure that cultural resources specialists and monitors have the authority to halt construction in the event of an inadvertent discovery; MM CUL-5 (Cultural Resources Worker Environmental Awareness Program) would require training for all construction personnel; MM CUL-6 (Monitoring for Cultural Resources) would require expert monitoring of all ground disturbance; MM CUL-7 (Cultural Resources Reporting) would require documentation of interim and final results of the construction monitoring program; MM CUL-8 (Curation of Cultural Resources Collections) would require curation of any cultural resources finds; and MM CUL-9 (Pre-construction Geoarchaeological Subsurface Excavation) requires a geoarchaeological study prior to construction.

Together these mitigation measures, along with measures to be developed in the MOA, would minimize the potential for adverse effects from solar facility construction to as-yet-unidentified archaeological sites. Therefore, based on the information available, the potential for adverse direct effects on cultural resources is moderate.

Indirect Effects

The construction of this alternative would result in indirect adverse effects associated with a visual intrusion into the historic setting of the proposed DTC/C-AMA historic district (NRHP-eligible).Mitigation Measures MM CUL-1 through CUL-9, described above and measures to be developed in the MOA, would reduce the impacts from solar facility construction to cultural resources.

Operation and Maintenance

Direct Effects

While no ground disturbance is planned for the operation of the facility, maintenance may require some particularly in the case of pipeline repair. The operation and maintenance of Alter-

native 4 would have a low potential to directly affect (i.e., damage or destroy) any buried archaeological sites that might be present because it is unlikely that previously undisturbed soils would be disturbed during operations. Therefore, the potential for adverse direct effects on cultural resources is low.

Mitigation Measures CUL-1 through CUL-9, and measures to be developed in the MOA, would minimize the potential for direct impacts from solar facility operation and maintenance to as-yet-unidentified archaeological sites.

Together these mitigation measures would minimize the potential for direct impacts from solar facility operation and maintenance to as-yet-unidentified archaeological sites. Therefore, based on the information available, the potential for adverse direct effects on cultural resources is low.

Indirect Effects

Operation and maintenance of Alternative 4 would result in indirect adverse effects associated with a visual intrusion into the historic setting of the proposed DTC/C-AMA historic district (NRHP-eligible). Mitigation Measures CUL-1 through CUL-9, and measures to be developed in the MOA, would reduce the adverse effects from solar facility operation and maintenance to cultural resources.

Decommissioning

Direct Effects

While no new areas of ground disturbance are proposed for decommissioning, decommissioning activities may not be limited to disturbing only previously disturbed soils at depth, and excavation for electrical wiring and steel support beams may occur to a deeper depth than excavation during construction. The decommissioning of Alternative 4 has a moderate potential to directly affect (i.e., damage or destroy) any buried archaeological sites that might be present. Therefore, the potential for adverse direct effects on cultural resources is moderate.

Mitigation Measures CUL-1 through CUL-9, and measures to be developed in the MOA, would minimize the potential for direct impacts from solar facility decommissioning to as-yet-unidentified archaeological sites.

Together these mitigation measures would minimize the potential for direct effects from solar facility decommissioning to as-yet-unidentified archaeological sites.

Indirect Effects

Decommissioning of Alternative 4 would result in indirect adverse effects associated with a visual intrusion into the historic setting of the proposed DTC/C-AMA historic district (NRHP-eligible). Mitigation Measures CUL-1 through CUL-9, and measures developed in the MOA, would reduce the adverse effects from solar facility decommissioning to cultural resources.

Mitigation Measures

The following mitigation measures are required to reduce effects related to cultural resources.

MM CUL-1 Memorandum of Agreement.

The BLM shall prepare a Memorandum of Agreement (MOA) in consultation with the SHPO, Indian tribes, and other interested parties. The MOA will govern the resolution of any adverse effects on historic properties (listed on or eligible for the NRHP) that may result from the proposed or alternative actions. It shall also govern MM CUL-2 through CUL-9, below. The MOA shall be executed prior to BLM's approval of the Record of Decision.

MM CUL-2 Project Cultural Resources Staff.

Project Cultural Resources Specialist. Prior to the issuance of a Notice to Proceed by BLM, a cultural resources specialist whose training and background conforms to the U.S. Secretary of Interior's Professional Qualifications Standards, as published in Title 36, Code of Federal Regulations, part 61 (36 C.F.R., part 61) shall be retained by the project owner and approved by the BLM to supervise monitoring of construction excavations and to produce a Monitoring and Treatment Plan for the approved project. Their qualifications shall be appropriate to the needs of the project and shall include a background in anthropology, archaeology, history, architectural history, or a related field. The Monitoring and Treatment Plan will be prepared and implemented under the direction of the cultural resources specialist and will address and incorporate MM CUL-1 through MM CUL-9.

Additional Cultural Resources Staff

The Project Cultural Resources Specialist may obtain the services of Cultural Resources Monitors and Field Crew if needed, to assist in mitigation, monitoring, and curation activities. These individuals must meet BLM qualifications and their resumes must be reviewed and approved by BLM prior to beginning work.

MM CUL-3 Monitoring and Treatment Plan. Prior to the issuance of a Notice to Proceed by BLM, the Project Cultural Resources Specialist shall submit a Monitoring and Treatment Plan for the project to the BLM for review and approval. The Monitoring and Treatment Plan shall be prepared and implemented under the direction of the Project Cultural Resources Specialist and shall address and incorporate MM CUL-1 through MM CUL-9. The Monitoring and Treatment Plan shall be prepared at the sole expense of the of the project proponent, and shall meet all BLM and Riverside County regulatory requirements. A monitoring plan indicates the avoidance or treatments recommended for the area of the proposed disturbance and must minimally address the following:

1. The duties of the Project Cultural Resources Specialist shall be fully discussed, including oversight/management duties with respect to site evaluation, data collection, monitoring, and reporting at both known prehistoric and historic-period archaeological sites and any NRHP and CRHR-eligible prehistoric and historic-period archaeological sites discovered during construction;
2. A general research design shall be developed that:
   a. Charts a timeline of all research activities;

b. Recapitulates any existing paleoenvironmental, prehistoric, ethnohistoric, ethnographic, and historic contexts to create a comprehensive historic context for the project vicinity;

c. Poses archaeological research questions and testable hypotheses specifically applicable to the archaeological resource types known for the project vicinity; and

d. Clearly articulates why it is in the public interest to address the research questions that it poses.

3. Artifact collection, retention/disposal, and curation policies shall be discussed, as related to the research questions formulated in the research design. These policies shall apply to cultural resources materials and documentation resulting from evaluation and data recovery at both known prehistoric and historic-period archaeological sites and any NRHP or CRHR-eligible prehistoric and historic-period archaeological sites discovered during construction.

4. The implementation sequence and the estimated time frames needed to accomplish all project-related tasks during the ground-disturbance and post-ground–disturbance analysis phases of the project shall be specified.

5. Person(s) expected to perform each of the tasks, their responsibilities, and the reporting relationships between project construction management and the mitigation and monitoring team shall be identified.

6. The manner in which Native American observers or monitors will be included, the procedures to be used to select them, and their roles and responsibilities shall be described.

7. All impact-avoidance measures (such as flagging or fencing) to prohibit or otherwise restrict access to sensitive resource areas that are to be avoided during ground disturbance, construction, and/or operation shall be described. Any areas where these measures are to be implemented shall be identified. The description shall address how these measures would be implemented prior to the start of ground disturbance and how long they would be needed to protect the resources from project-related impacts.

8. The commitment to record on Department of Parks and Recreation (DPR) 523 forms, to map, and to photograph all encountered cultural resources over 50 years of age shall be stated. In addition, the commitment to curate all archaeological materials retained as a result of the archaeological investigations (survey, testing, data recovery), in accordance with the BLM requirements and the California State Historical Resources Commission's Guidelines for the Curation of Archaeological Collections, into a retrievable storage collection in a public repository or museum shall be stated.

9. The commitment of the project owner to pay all curation fees for artifacts recovered and for related documentation produced during cultural resources investigations conducted for the project shall be stated. The project owner shall identify a curation facility that could accept cultural resources materials resulting from DHSP cultural resources investigations.

10. The contents, format, and review and approval process of the final Cultural Resource Report (CRR) shall be described and shall meet BLM and Riverside County guidelines.

MM CUL-4 **Authority to Halt Construction.** The project owner shall grant authority to halt construction-related ground disturbance to the Project Cultural Resources Specialist and cultural resources monitors in the event of a discovery. Redirection of construction-related ground disturbance shall be accomplished under the direction of the construction supervisor in consultation with the cultural resources specialist. The details of this agreement shall be stipulated in the Monitoring and Treatment Plan Mitigation Measure CUL-3.

MM CUL-5 **Cultural Resources Worker Environmental Awareness Program (WEAP).** Prior to issuing a BLM Notice to Proceed, the project proponent shall submit evidence of that WEAP training has been provided to construction supervisors and crew to ensure their awareness of requirements regarding the protection of historic properties and procedures to be implemented in the event that archaeological sites are encountered by ground-disturbing activities. This training will be prepared by the Project Cultural Resources Specialist (MM CUL-2), reviewed and approved by the BLM, and presented by a qualified cultural resources specialist. All construction supervisors and crewmembers shall be required to undergo archaeological WEAP training prior to commencement of ground-disturbing activities or prior to beginning work on the project site. WEAP training shall also be required for decommissioning personnel.

MM CUL-6 **Monitoring for Cultural Resources.** Ground-disturbing activities related to construction, operation, maintenance, and decommissioning shall be monitored by a cultural resources monitor. The personnel involved in monitoring, the qualifications of those personnel, and the monitoring intensity shall be shall be stipulated in the Monitoring and Treatment Plan Mitigation Measure CUL-3. However, at a minimum monitoring shall be conducted by a qualified archaeologist familiar with the types of historical and prehistoric resources that could be encountered within the approved project area, and under direct supervision of a principal archaeologist. All cultural resources personnel will be approved by the BLM through the agency's Cultural Resource Use Permitting process. A Native American monitor may be required at culturally sensitive locations specified by the BLM following government-to-government consultation with Indian Tribes. The Monitoring and Treatment Plan (MM CUL-3) shall indicate the types of locations where Native American monitors will be required and shall specify the tribal affiliation of the required Native American monitor for each location. The project owner shall retain and schedule any required Native American monitors. If cultural resources are encountered during construction or decommissioning, treatment shall occur per Mitigation Measure CUL-3 (Monitoring and Treatment Plan. At a minimum, this treatment will include stop work orders in the vicinity of the find, recordation and evaluation of the find by a qualified cultural resources specialist, notification of the find to BLM and the appropriate state regulatory agency, and appropriate treatment measures, possibly including data recovery or avoidance.

MM CUL-7 **Cultural Resources Reporting.** The project Cultural Resources Specialist shall document interim results of the construction monitoring program with daily, weekly, or monthly progress reports as necessary to the project owner, state regulatory agency and the BLM. The contents of these reports shall be stipulated in the Monitoring and Treatment Plan per Mitigation Measure CUL-3.

The final cultural resources report shall be written by or under the direction of the project cultural resources specialist and shall be provided in the State of California Archaeological Resource Management Report and appropriate BLM report format. The final document shall report on all field activities including dates, times and locations, results, samplings, and analyses. All survey reports, Department of Parks and Recreation (DPR) 523 forms, data recovery reports, and any additional research reports not previously submitted to the California Historical Resource Information System (CHRIS) and the State Historic Preservation Officer (SHPO) shall be included as appendices. Additional reporting requirements may be specified in the Monitoring and Treatment Plan per Mitigation Measure CUL-3.

MM CUL-8 **Curation of Cultural Resources Collections.** All archaeological materials retained as a result of the archaeological investigations (survey, testing, data recovery) shall be curated in accordance with BLM requirements and the California State Historical Resources Commission's *Guidelines for the Curation of Archaeological Collections,* into a retrievable storage collection in a public repository or museum. Additional curation requirements may be specified in the Monitoring and Treatment Plan per Mitigation Measure CUL-3.

MM CUL-9 **Pre-construction Geoarchaeological Subsurface Excavation.** Prior to issuing a BLM Notice to Proceed, the Project Cultural Resources Specialist with the assistance of a qualified geoarchaeologist, shall submit a Pre-construction Geoarchaeological Subsurface Excavation Plan for the project to the BLM for review and approval. The Plan shall be prepared and implemented by a qualified geoarchaeologist under the direction of the Project Cultural Resources Specialist. Implementation of the Plan shall be complete prior to the completion of the Monitoring and Treatment Plan (CUL-3) so that the resulting information can guide the project mitigation and monitoring strategy. The Plan shall be prepared and implemented at the sole expense of the project proponent, and meet all BLM and Riverside County regulatory requirements. The geoarchaeological plan is intended guide the investigation of landforms in the project area to develop an understanding of their age and origin, relative to the physical contexts of surface and subsurface archaeological deposits on the proposed project area. Subsurface excavation shall take place in a minimum of 10 locations within the project area, one each in each proposed solar fields, and the remainder placed along the chosen gen-tie line alternative at the discretion of a qualified geoarchaeologist. Trench walls shall be examined and documented by a qualified geoarchaeologist. Small samples from each trench shall be screened through mesh fine enough to collect microvertebrate fossils. A minimum of 10 charcoal or soil humate samples, as appropriate, shall be collected and shall be subjected to AMS radiocarbon dating. Upon completion of all field work and laboratory analysis, a letter report describing the

results of the geoarchaeological study must be submitted to the BLM and the County of Riverside Planning Department for review and approval. The results shall be incorporated into the Monitoring and Treatment Plan.

Residual Impacts and Unavoidable Adverse Effects

Impacts on cultural resources would exist after Applicant Measures and mitigation measures are implemented. Cultural resources damaged or destroyed by Project construction, even if subjected to mitigation, would be permanently lost. The cultural resources would therefore be unavailable for future study to address future research needs when more advanced investigative techniques and methods of analysis might be available. Unavoidable adverse effects on cultural resources would result from construction, operation, and decommissioning of all of the proposed project components under Alternative 4. At this time, it is unknown if impacts on cultural resources can be satisfactorily mitigated, primarily because the MOA and Native American consultations are still in progress. Consultation may raise issues that cannot be resolved through mitigation measures. Prescribed treatments may resolve adverse effects under Section 106. However, given the scale and impact to several of the resources identified, impacts under NEPA may remain despite implementation of the MOA, Applicant Measures, and other mitigation measures. Therefore, the identified impacts of construction, operation, and decommissioning of Alternative 4 are considered unavoidable adverse effects.

4.6.7 Alternative 5 – Solar Project Excluding WHMA

Alternative 5 would remain in the same location as Alternative 4 and would use the same project boundaries as Alternative 4 except that it would exclude the portion of the site which is within the Palen-Ford Wildlife Habitat Management Area (WHMA). Alternative 5 would affect the same cultural resources as Alternative 4, and the disturbed area would be only marginally smaller. In addition, there is a moderate probability that as-yet-unidentified archaeological sites could be affected.

Construction

Direct and Indirect Effects

The effects resulting from constructing Alternative 5 would be the same as those discussed under Alternative 4.

Operation and Maintenance

Direct and Indirect Effects

The effects resulting from the operation and maintenance Alternative 5 would be the same as those discussed under Alternative 4.

Decommissioning

Direct and Indirect Effects

The effects resulting from decommissioning Alternative 5 would be the same as those discussed under Alternative 4.

Mitigation Measures

The mitigation measures MM CUL-1 through MM CUL-9, and measures developed in the MOA, are required to reduce adverse project effects related to cultural resources.

Residual Impacts and Unavoidable Adverse Effects

The unavoidable adverse effects of Alternative 5 would be the same as those discussed under Alternative 4.

4.6.8 Alternative 6 – Reduced Footprint Solar Project

Alternative 6 would remain in the same location as Alternative 4 and would use the same project boundaries as Alternative 4 except that it would exclude the southern parcel. This alternative would encompass approximately 1,044 acres. Alternative 6 would affect the same cultural resources as Alternative 4. In addition, there is a moderate probability that as-yet-unidentified archaeological sites could be impacted. However, a reduced footprint would likely reduce the total number of cultural resources impacted.

Construction

Direct and Indirect Effects

The effects resulting from constructing Alternative 6 would be the same as those discussed under Alternative 4.

Operation and Maintenance

Direct and Indirect Effects

The effects resulting from the operation and maintenance Alternative 6 would be the same as those discussed under Alternative 4.

Decommissioning

Direct and Indirect Effects

The effects resulting from decommissioning Alternative 6 would be the same as those discussed under Alternative 4.

Mitigation Measures

The mitigation measures MM CUL-1 through MM CUL-9, and measures developed as part of the MOA as described above, are required to reduce adverse project effects related to cultural resources.

Residual Impacts and Unavoidable Adverse Effects

The unavoidable adverse effects of Alternative 6 would be the same as those discussed under Alternative 4.

4.6.9 Alternative 7 – High-Profile Reduced Footprint Solar Project

Alternative 7 would be constructed within the same project boundaries as Alternative 6. Alternative 7 would encompass an estimated 1,044 acres and would be an estimated 125 to 135 MW nominal capacity project. Project details are the same as for Alternative 4, with the only exception being the overall height of the panels for Alternative 7. Alternative 7 would use high-profile single-axis tracking panels that would have a total height of 15 feet. Alternative 7 would affect the same cultural resources as Alternative 4. In addition, there is a moderate probability that as-yet-unidentified archaeological sites could be impacted. However, a reduced footprint would likely reduce the total number of cultural resources impacted.

Construction

Direct and Indirect Effects

The effects resulting from constructing Alternative 7 would be the same as those discussed under Alternative 4.

Operation and Maintenance

Direct and Indirect Effects

The effects resulting from the operation and maintenance Alternative 7 would be the same as those discussed under Alternative 4.

Decommissioning

Direct and Indirect Effects

The effects resulting from decommissioning Alternative 7 would be the same as those discussed under Alternative 4.

Mitigation Measures

The mitigation measures MM CUL-1 through MM CUL-9, and measures developed as part of the MOA as described above, are required to reduce adverse project effects related to cultural resources.

Residual Impacts and Unavoidable Adverse Effects

The unavoidable adverse effects of Alternative 7 would be the same as those discussed under Alternative 4.

4.6.10 Alternative A – No Gen-Tie

Under Alternative A, the proposed Desert Harvest Solar Project gen-tie would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site either available or unavailable for future solar energy development. As a result, the Desert Harvest Solar Project gen-tie would not be constructed. The lack of a gen-tie would prevent the rest of the project from being constructed as well. The BLM would manage the site consistent with the amended land use designation in the CDCA Land Use Plan. No impacts from the Desert Harvest Solar Project would occur.

4.6.11 Alternative B – Proposed Gen-Tie (Shared Towers)

Gen-Tie Line Alternative B would exit the southwest portion of the solar facility site, run south along the west side of Kaiser Road, turn east just north of Desert Center, and then run south across I-10 to the Red Bluff Substation. The transmission corridor would cover a total length of approximately 12.06 miles with a 160-foot wide corridor with plus 450-foot radius fan-shaped stringing areas at each turn. Under this alternative, towers would be shared with the Desert Sunlight Solar Project along the A-1 alignment, should that gen-tie line ultimately be constructed; however, the analysis for direct and indirect effects on cultural resources assumes that complete construction of Alternative B would occur independent of whether the Desert Sunlight gen-tie ultimately is constructed. For combined effects of the two gen-ties, see the cumulative effects analysis in Section 4.6.15.

Alternative B may directly impact 4 prehistoric archaeological sites, 14 historic archaeological sites, 2 multicomponent archaeological sites, and 6 sites of unknown temporal affiliation. It may also indirectly impact 2 historic districts, 1 proposed historic district, segments of a prehistoric trail, 2 WWII era refuse scatters, and 6 built-environment resources. In addition, the geologic unit underlying this alternative consist primarily of recent age alluvial deposits. There is a possibility that as yet unidentified archaeological sites within these deposits could be adversely affected.

Construction

Direct Effects

Construction of Alternative B would require clearing and grading that would directly impact archaeological sites, built environment resources, and the proposed historic landscapes by damaging and displacing artifacts and features, resulting in loss of information about history and prehistory, construction of modern elements out of character with a historic setting, and degrading the preservation value of these resources. Specifically this construction may adversely affect 1 archaeological site which has been determined eligible, 7 sites that are assumed eligible, and 7 sites which have not been evaluated. In addition, the geologic units present along Alternative B have a moderate potential to contain buried archaeological sites. The physical disturbance of the geologic units present along the gen-tie line during construction could directly impact (i.e., damage or destroy) any subsurface archaeological sites that might be present. Therefore, the potential for adverse direct effects on cultural resources is moderate.

Mitigation Measure (MM) CUL-1 (Memorandum of Agreement) clarifies that a MOA shall be developed and that it shall govern the resolution of any adverse effects on historic properties; MM CUL-2 (Project Cultural Resources Staff) would require a qualified cultural resources specialist to be retained by the project owner to develop and implement the Monitoring and Treatment Plan; MM CUL-3 (Monitoring and Treatment Plan) would require the development and implementation of a plan to guide all project cultural resources work; MM CUL-4 (Authority to Halt) would ensure that cultural resources specialists and monitors have the authority to halt construction in the event of an inadvertent discovery; MM CUL-5 (Cultural Resources Worker Environmental Awareness Program) would require training for all construction personnel; MM CUL-6 (Monitoring for Cultural Resources) would require expert monitoring of all ground disturbance; MM CUL-7 (Cultural Resources Reporting) would require documentation of interim and final results of the construction monitoring program; MM CUL-8 (Curation of Cultural

Resources Collections) would require curation of any cultural resources finds; and MM CUL-9 (Pre-construction Geoarchaeological Subsurface Excavation) requires a geoarchaeological study prior to construction.

Together these mitigation measures, along with measures to be developed in the MOA, would minimize the potential for adverse effects from solar facility construction to as-yet-unidentified archaeological sites. Therefore, based on the information available, the potential for adverse direct effects on cultural resources is moderate.

Indirect Effects

Indirect visual, auditory, and atmospheric effects as a result of Alternative B may occur to the North Chuckwalla Petroglyph District (CA-Riv-1383, NRHP listed), segments of a prehistoric trail (CA-Riv-053T, NRHP eligible), and the proposed DTC/C-AMA historic district (NRHP eligible).

Mitigation Measures (MM) CUL-1 through (MM) CUL-9, and measures developed as part of the MOA, would reduce the impacts from solar facility construction to cultural resources.

Operation and Maintenance

Direct Effects

While no ground disturbance is planned for the operation of the facility, maintenance may require some particularly in the case of pipeline repair. The operation and maintenance activities of Alternative B has a moderate potential to directly affect (i.e., damage or destroy) any buried archaeological sites that might be present.

Mitigation Measures CUL-1 through CUL-9, and measures developed as part of the MOA as described above, would minimize the potential for direct impacts from solar facility operation and maintenance to as-yet-unidentified archaeological sites.

Together these mitigation measures would minimize the potential for direct impacts from gen-tie facility operation and maintenance to as-yet-unidentified archaeological sites. Therefore, based on the information available, the potential for adverse direct effects on cultural resources is moderate.

Indirect Effects

Operation and maintenance of Alternative B may result in indirect visual, auditory, and atmospheric effects to the North Chuckwalla Petroglyph District (CA-Riv-1383, NRHP listed), segments of a prehistoric trail (CA-Riv-053T, NRHP eligible), and the proposed DTC/C-AMA historic district (NRHP eligible).

Mitigation Measures CUL-1 through CUL-9, and measures developed as part of the MOA as described above, would reduce the impacts from solar facility operation and maintenance to cultural resources.

Decommissioning

Direct Effects

While no new areas of ground disturbance are proposed for decommissioning, decommissioning activities may not be limited to disturbing only previously disturbed soils at depth, and excavation for electrical wiring and steel support beams may occur to a deeper depth than excavation during construction. The decommissioning of Alternative B has a moderate potential to directly affect (i.e., damage or destroy) any buried archaeological sites that might be present. Therefore, the potential for adverse direct effects on cultural resources is moderate.

Mitigation Measures CUL-1 through CUL-9, and measures developed as part of the MOA as described above, would minimize the potential for direct impacts from solar facility operation and maintenance to as-yet-unidentified archaeological sites.

Together these mitigation measures would minimize the potential for direct impacts from solar facility operation and maintenance to as-yet-unidentified archaeological sites. Therefore, based on the information available, the potential for adverse direct effects on cultural resources is moderate.

Indirect Effects

Decommissioning of Alternative B may result in indirect visual, auditory, or atmospheric effects to the North Chuckwalla Petroglyph District (CA-Riv-1383, NRHP listed), segments of a prehistoric trail (CA-Riv-053T, NRHP eligible), and the proposed DTC/C-AMA historic district (NRHP eligible)

Mitigation Measures CUL-1 through CUL-9, and measures developed as part of the MOA as described above, would reduce the impacts from solar facility operation and maintenance to cultural resources.

Mitigation Measures

Mitigation Measures CUL-1 through CUL-9, and measures developed as part of the MOA as described above, are required to reduce adverse project effects related to cultural resources.

Residual Impacts and Unavoidable Adverse Effects

At this time, it is unknown if impacts on cultural resources as a result of Alternative B can be satisfactorily mitigated, primarily because identification efforts have not been completed for this project. Tribal consultation on this project is also ongoing, and may identify additional resources or raise issues that cannot be resolved through mitigation measures.

4.6.12 Alternative C – Separate Transmission Towers within Same ROW

Gen-tie line Alternative C follows the same route as Alternative B; however, instead of sharing towers in this alternative each project has separate transmission towers within the same ROW. DHSP towers will be located to the west of DSSP towers. This alternative may impact the same cultural resources as Alternative B.

Construction

Direct and Indirect Effects

The effects resulting from constructing Alternative C would be the same as those discussed under Alternative B.

Operation and Maintenance

Direct and Indirect Effects

The effects resulting from the operation and maintenance Alternative C would be the same as those discussed under Alternative B.

Decommissioning

Direct and Indirect Effects

The effects resulting from decommissioning Alternative C would be the same as those discussed under Alternative B.

Mitigation Measures

Mitigation Measures CUL-1 through CUL-9, and measures developed as part of the MOA as described above, are required to reduce adverse project effects related to cultural resources.

Residual Impacts and Unavoidable Adverse Effects

The unavoidable adverse effects of Alternative C would be the same as those discussed under Alternative B.

4.6.13 Alternative D – Cross-Valley Alignment

Gen-tie Alternative D (also formerly evaluated in the Desert Sunlight Solar Farm Project EIS as DSSP Alternative A-2) would exit the southwest corner of the solar facility site, run for a short distance along the east side of Kaiser Road until it intersects with the ROW of an existing SCE transmission line, run to the southeast along the existing transmission ROW, then turn south across I-10 to the Red Bluff Substation. The transmission corridor would cover a total length of approximately 10.45 miles with a 160- foot wide corridor with 450-foot radial fan-shaped areas at each turn. This alternative may directly impact six historic archaeological sites and indirectly impact one prehistoric trail, one archaeological district, one historic archaeological site, and one proposed historic district. The sites are primarily historic archaeological sites, three of which are associated with the DTC/C-AMA. Currently, BLM has determined that one of these resources is eligible for the NRHP (P-33-18392) while two were determined not eligible. The remaining three resources have not been evaluated. In addition, the geologic unit underlying these two parcels consists primarily of recent age alluvial deposits. As such, there is a possibility that as-yet-unidentified archaeological sites within these deposits could be adversely affected.

Construction

Direct Effects

Construction of Alternative D would require clearing and grading that may directly affect archaeological sites and built environment resources, and may impact the proposed historic landscapes by damaging and displacing artifacts and features, resulting in loss of information about history and prehistory, construction of modern elements out of character with a historic setting, and degrading the preservation value of these resources. Specifically this construction may adversely affect one archaeological site that has been determined eligible and three sites that have not been evaluated. In addition, the geologic units present along Alternative D have a moderate potential to contain buried archaeological sites. The physical disturbance of the geologic units present along the gen-tie line during construction could directly affect (i.e., damage or destroy) any subsurface archaeological sites that might be present.

Mitigation Measures CUL-1 through CUL-9, and measures developed as part of the MOA as described above, would minimize the potential for direct effects from gen-tie construction to as-yet-unidentified archaeological sites.

Indirect Effects

Indirect visual, auditory, and atmospheric effects as a result of Alternative D may occur to the North Chuckwalla Petroglyph District (CA-Riv-1383, NRHP listed), segments of a prehistoric trail (CA-Riv-053T, NRHP eligible), one WWII-era refuse scatter (P-33-18352, NRHP eligible), and the proposed DTC/C-AMA historic district (NRHP eligible)

Mitigation Measures CUL-1 through CUL-9, and measures developed as part of the MOA as described above, would reduce the impacts from solar facility construction to cultural resources.

Operation and Maintenance

Direct Effects

While no ground disturbance is planned for the operation of the facility, maintenance may require some particularly in the case of pipeline repair. The operation and maintenance of Alternative D has a moderate potential to directly affect (i.e., damage or destroy) any buried archaeological sites that might be present. Therefore, the potential for adverse direct effects on cultural resources is moderate.

Mitigation Measures CUL-1 through CUL-9, and measures developed as part of the MOA as described above, would minimize the potential for direct effects from solar facility operation and maintenance to as-yet-unidentified archaeological sites.

Together these mitigation measures would minimize the potential for direct effects from gen-tie facility operation and maintenance to as-yet-unidentified archaeological sites.

Indirect Effects

Operation and maintenance of Alternative D may result in indirect visual, auditory, and atmospheric effects to the North Chuckwalla Petroglyph District (CA-Riv-1383, NRHP listed), seg-

ments of a prehistoric trail (CA-Riv-053T, NRHP eligible), one WWII-era refuse scatter (P-33-18352, NRHP eligible), and the proposed DTC/C-AMA historic district (NRHP eligible)

Mitigation Measures CUL-1 through CUL-9, and measures developed as part of the MOA as described above, would reduce the effects from solar facility operation and maintenance to cultural resources.

Decommissioning

Direct Effects

While no new areas of ground disturbance are proposed for decommissioning, decommissioning activities may not be limited to disturbing only previously disturbed soils at depth, and excavation for electrical wiring and steel support beams may occur to a deeper depth than excavation during construction. The decommissioning of Alternative D has a moderate potential to directly affect (i.e., damage or destroy) any buried archaeological sites that might be present. Therefore, the potential for adverse direct effects on cultural resources is moderate.

Mitigation Measures CUL-1 through CUL-9, and measures developed as part of the MOA as described above, would minimize the potential for direct effects from solar facility operation and maintenance to as-yet-unidentified archaeological sites.

Indirect Effects

Decommissioning of Alternative D may result in indirect visual, auditory, and atmospheric effects to the North Chuckwalla Petroglyph District (CA-Riv-1383, NRHP listed), segments of a prehistoric trail (CA-Riv-053T, NRHP eligible), one WWII-era refuse scatter (P-33-18352, NRHP eligible), and the proposed DTC/C-AMA historic district (NRHP eligible).

Mitigation Measures CUL-1 through CUL-9, and measures developed as part of the MOA as described above, would reduce the effects from solar facility operation and maintenance to cultural resources.

Mitigation Measures

The mitigation measures CUL-1 through CUL-9, and measures developed as part of the MOA as described above, are required to reduce adverse project effects related to cultural resources.

Residual Impacts and Unavoidable Adverse Effects

The unavoidable adverse effects of Alternative D would be the same as those discussed under Alternative B.

4.6.14 Alternative E – New Cross-Valley Alignment

Gen-tie Alternative E would exit the southeast corner of the solar farm site, run east across BLM and MWD land, cross Highway 177, intersect with the ROW of an existing SCE transmission line, then turn south across I-10 to the Red Bluff Substation. The transmission corridor covers a total length of approximately 11.47 miles with a 160- foot wide corridor with a 450-foot radial fan-shaped stringing area at each turn. This alternative may directly impact eight historical archaeological sites and may indirectly impact one archaeological district, one prehistoric trail,

and one proposed historic district. BLM has evaluated six of these sites for NRHP eligibility, and determined them not eligible; the remaining site has not been evaluated. In addition, the geologic unit underlying these two parcels consists primarily of recent age alluvial deposits. As such, there is a possibility that as-yet-unidentified archaeological sites within these deposits could be adversely affected.

Construction

Direct Effects

Construction of Alternative E would require clearing and grading that would directly affect archaeological sites, built environment resources, and proposed historic landscapes by damaging and displacing artifacts and features, resulting in loss of information about history and prehistory, construction of modern elements out of character with a possible historic setting, and degrading the preservation value of these resources. Specifically this construction might affect one archaeological site which has not been evaluated for the NRHP, and is therefore potentially eligible. In addition, the geologic units present along Alternative E have a moderate potential to contain archaeological deposits. The physical disturbance of the geologic units present along the gen-tie line during construction could directly impact (i.e., damage or destroy) any cultural resources that might be present.

Mitigation Measures CUL-1 through CUL-9, and measures developed as part of the MOA as described above, would minimize the potential for direct impacts from gen-tie construction to as-yet-unidentified cultural resources.

Indirect Effects

Indirect visual, auditory, and atmospheric effects may occur to the North Chuckwalla Petroglyph District (CA-Riv-1383, NRHP listed), segments of a prehistoric trail (CA-Riv-053T, NRHP eligible), and the proposed DTC/C-AMA historic district (NRHP eligible).

Mitigation Measures CUL-1 through CUL-9, as described above, would reduce the impacts from solar facility construction to these sensitive resources.

Operation and Maintenance

Direct Effects

While no ground disturbance is planned for the operation of the facility, maintenance may require some particularly in the case of pipeline repair. The operation and maintenance of Alternative E would have a low potential to directly affect (i.e., damage or destroy) any buried archaeological sites that might be present because it is unlikely that previously undisturbed soils would be disturbed during operations. Therefore, the potential for adverse direct effects on cultural resources is low.

Mitigation Measures CUL-1 through CUL-9 and measures developed as part of the MOA, would minimize the potential for direct impacts from solar facility operation and maintenance to as-yet-unidentified archaeological sites.

Together these mitigation measures would minimize the potential for direct impacts from solar facility operation and maintenance to as-yet-unidentified archaeological sites. Therefore, based on the information available, the potential for adverse direct effects on cultural resources is low.

Indirect Effects

Operation and maintenance of Alternative E may result in indirect visual, auditory, and atmospheric effects to the North Chuckwalla Petroglyph District (CA-Riv-1383, NRHP listed), segments of a prehistoric trail (CA-Riv-053T, NRHP eligible), and the proposed DTC/C-AMA historic district (NRHP eligible).

Mitigation Measures CUL-1 through CUL-9, and measures developed as part of the MOA as described above, would reduce the impacts from operation and maintenance to these sensitive resources.

Decommissioning

Direct Effects

While no new areas of ground disturbance are proposed for decommissioning, decommissioning activities may not be limited to disturbing only previously disturbed soils at depth, and excavation for electrical wiring and steel support beams may occur to a deeper depth than excavation during construction. The decommissioning of Alternative E has a moderate potential to directly affect (i.e., damage or destroy) any buried archaeological sites that might be present. Therefore, the potential for adverse direct effects on cultural resources is moderate.

Mitigation Measures CUL-1 through CUL-9, and measures developed as part of the MOA would minimize the potential for direct impacts from solar facility decommissioning to as-yet-unidentified archaeological sites.

Together these mitigation measures would minimize the potential for direct effects from solar facility decommissioning to as-yet-unidentified archaeological sites.

Indirect Effects

Decommissioning of Alternative E may result in indirect visual, auditory, and atmospheric effects to the North Chuckwalla Petroglyph District (CA-Riv-1383, NRHP listed), segments of a prehistoric trail (CA-Riv-053T, NRHP eligible), and the proposed DTC/C-AMA historic district (NRHP eligible).

Mitigation Measures CUL-1 through CUL-9, and measures developed as part of the MOA as described above, would reduce the impacts from operation and maintenance to these sensitive resources.

Mitigation Measures

Mitigation Measures CUL-1 through CUL-9, and measures developed as part of the MOA as described above, are required to reduce adverse project effects related to cultural resources.

Residual Impacts and Unavoidable Adverse Effects

The unavoidable adverse effects of Alternative E would be the same as those discussed under Alternative B.

4.6.15 Cumulative Effects

This section evaluates the potential for DHSP, and other development projects within the vicinity of DHSP, to have cumulative effects to historic properties. These effects may result in a substantially adverse change in the significance of a historic property, potentially jeopardizing its eligibility for listing on the NRHP and CRHR.

Geographic Scope

For the cultural resources cumulative analysis, the regional scope was defined at two levels: local and regional. At the local level, the geographic area considered for cumulative impacts on cultural resources is a loosely defined area on either side of I-10 between Desert Center and Blythe in eastern Riverside County, hereafter referred to as the I-10 Corridor. This corridor overlaps to a large extent with BLM's California Desert Conservation Area (CDCA). The Corridor does not have strictly defined boundaries, and therefore does not have an area. However, the area is broadly equivalent to a 4-mile-wide strip (2 miles to either side of I-10) and 48 miles long, between Blythe and Desert Center (Figure 4.1-1). The area of this strip is 192 square miles (122,440 acres). This region was chosen because of its geographical proximity to the proposed project, the large number of recent cultural resources work conducted in the region associated with other large proposed projects, and the broadly similar cultural resources found in the region.

Although the total number of cultural resources present in this area is unknown, a rough order of magnitude estimate can be derived (Table 4.6.2) based on recent surveys related to four proposed solar power projects (Desert Sunlight Solar Farm, Genesis Solar Energy Project, Palen Solar Power Project and Blythe Solar Power Project) which surveyed a total of 29,574 acres (Chandler et al. 2010; Farmer et al. 2009; Keller 2010; Tennyson and Apple 2010). These projects recorded 554 cultural resources, indicating that the Corridor has an average site density of 0.019 cultural resources per acre, and 0.002 potentially eligible resources (historic properties) per acre. This figure suggests that the Corridor originally contained approximately 2,326 cultural resources, 245 of which may have been eligible for the NRHP and the CRHR and therefore considered historic properties.

The information available in The Eastern Information Center (EIC) of the California Historical Resources Information System (CHRIS) and from similar BLM databases are not detailed enough to support a substantive qualitative cumulative analysis. However, the Desert Training Center Cultural Landscape and Prehistoric Trails Network Cultural Landscape studies designed by the California Energy Commission for the I-10 Corridor are intended to facilitate the development of just such a database. This work is ongoing. In the meantime, information from these four proposed solar projects can also provide a rough idea of the types of historic properties present within the I-10 Corridor (Chandler et al. 2010; Farmer et al. 2009; Keller 2010; Tennyson and Apple 2010). Pedestrian surveys associated with these projects show that the majority of historic properties in the region are archaeological sites, approximately 16percent of which are prehistoric and 80percent are historic. Ethnographic sources suggest that portions of the Mojave Desert distant from water sources were primarily used for travel and ritual activities

rather than for the collection of resources (Cleland 2005). Other common activities are associated with the collection and processing of wild resources around the edges of the intermittent lakes and quarrying for material for stone tools and ground stone. These sites primarily consist of trails, trail-associated ceramic scatters and petroglyphs, sparse artifact scatters, lithic quarries and possible temporary campsites. The sparse artifact scatters are primarily prehistoric flakes and cores. These tend to blend into the prehistoric isolates, which are also predominantly lithics, forming a landscape with regular but diffuse evidence of prehistoric human activities. Historic period sites are associated with historic mining, movement through the area by automobile, and WWII era maneuvers associated with the DTC/C-AMA. These sites are primarily debris scatters. Some are mainly domestic debris and may have been dumped by passing travelers or off-road vehicle drivers. Others are a mix of domestic military debris, suggesting they are the remains of temporary military camps that were part of the DTC/C-AMA. Occasional military features such as earthen mounds and possible foxholes have also been noted. The historic-period isolates reflect these same kinds of activities.

Table 4.6-2. Cumulative Analysis Results: Estimated Number of Cultural Resources per Acre

Location	Acres	Number of Known Cultural Resources	Number of Potentially Eligible Cultural Resources
Desert Sunlight Genesis Blythe Palen	29,574	554 = Average Density of 0.019 sites per acre	70 = Average Density of 0.002 sites per acre
		Estimated Number of Cultural Resources (Acres x 0.019)	Estimated Number of Potentially Eligible Cultural Resources (Acres x 0.002)
I-10 Corridor	122, 440	2, 326	245
Southern California Desert Region	11,000,000	209,000	22,000
Existing Projects, I-10 Corridor			
Chuckwalla Valley Prison and Ironwood Prison	1,720	33	3
I-10 Freeway	2,328	44	5
2 Transmission Lines and 1 Gas Line	348	7	1
Blythe PV and Energy Projects	276	5	1
Chuckwalla Valley Raceway	400	8	1
Kaiser Eagle Mountain Mine	3,500	67	7
Subtotal	8,572	164	18
Reasonably Foreseeable Future Projects, I-10 Corridor			
2 Transmission Lines and 2 Substations	366	7	1
15 Energy Projects	47,141	896	94
Subtotal	47,507	903	95

At the regional level, the geographic area considered for cumulative impacts on cultural resources is defined as the 11-million acre BLM Southern California Desert Region. Unlike other parts of California that were more densely occupied in prehistory, little is known about the cultural resources of the desert region examined for this cumulative study. If the same average cultural resources density identified for the I-10 Corridor is applied to the Southern California Desert Region, the region may contain 209,000 cultural resources. Of these resources 22,000 of them may be eligible for the NRHP and the CRHR and therefore considered historic properties. Similarly,

according to the CHRIS only 20 percent of Riverside and San Bernardino counties have been surveyed for cultural resources. These studies have resulted in the identification and documentation of more than 20,000 cultural resources. These results suggest that there is a high potential to discover previously undocumented cultural resources within the cumulative study region.

This cumulative analysis for the proposed project and alternatives is based upon:

- Existing development projects on BLM, state, and private lands (Figure 4.1-1, Table 4.1-1).
- Foreseeable projects in the immediate vicinity of the I-10 Corridor (Figure 4.1.1, Table 4.1-2)

Cumulative Effects Analysis

Impacts of Existing Projects

Analysis of cumulative impacts of existing projects emphasized those projects and developments listed in Table 4.1-1 that are expansive and have disturbed the most acreage. Many of these projects were completed prior to the existence or regular enforcement of state and federal cultural resource laws. As such, the actual number of cultural resources within each project area and the number of cultural resources destroyed by the project is unknown. The following calculations are estimates.

I-10 Corridor

At the regional level, the construction of Chuckwalla Valley and Ironwood State Prisons disturbed approximately 1,720 acres. This cumulative analysis suggests that 33 cultural resources were destroyed during these projects, 3 of which may have been eligible for the NHRP and the CRHR and therefore considered historic properties.

The construction of I-10, a four-lane divided highway, with associated bridges, off-ramps, and berm system, also resulted in significant ground disturbance in the Corridor. Assuming a width of a minimum of 200 feet and a length of 48 miles, within the I-10 Corridor this project disturbed approximately 10,137,600 square feet (2,328 acres). This analysis suggests that 44 cultural resources were destroyed during this construction, 5 of which were eligible for the NHRP and the CRHR (historic properties).

Another linear project within the Corridor was the Devers-Palo Verde Transmission Line, a 500 kV transmission line paralleling I-10. The disturbance caused by the construction of transmission lines is generally less than the disturbance caused by freeway construction. However, each line has an associated access road. Based on the construction of the access road and excluding the transmission tower pads, a width of 20 feet for each project and a length of 48 miles was calculated for this analysis (116 acres). A similar calculation was made for the Blythe-Eagle Mountain Transmission Line and a natural gas line, both of which were constructed parallel to I-10. This analysis estimates that during the construction of these three linear projects, approximately 348 acres were disturbed, and 7 cultural resources were destroyed, 1 of which was likely to be eligible for the NHRP and the CRHR (historic property).

The construction of the Chuckwalla Valley Raceway, the Blythe PV Project and the Blythe Energy Project disturbed approximately 676 acres. This cumulative analysis suggests that 13 cultural resources were destroyed during these projects, 2 of which may have been eligible for the NHRP and the CRHR (historic properties).

Finally, the mining activities at the Kaiser Eagle Mountain Mine may have disturbed more than 3,500 acres. Several plans for the use of this disturbed area have been proposed, but, from the perspective of cultural resources, new projects would be unlikely to cause more damage than has already occurred.

In total, together, the larger of the ground-disturbing projects within the I-10 Corridor disturbed at least 8,572 acres, or 7 percent of the Corridor. One hundred and sixty-four of the estimated 2,326 cultural resources were likely destroyed by these projects. Of the 245 historic properties that would have been eligible for the NHRP and the CRHR within the I-10 Corridor, 18 would have been destroyed. Certain site types, particularly those associated with dry lakes may have been disproportionately affected. A more detailed cumulative analysis would be needed to determine if this was the case.

Southern California Desert Region

Within the larger Southern California Desert Region, the most intensive use of the desert and concomitant disturbance of cultural resources has been on designated military installations (e.g., Edwards Air Force Base, Fort Irwin, Twentynine Palms Marine Corps Base, Chocolate Mountain Naval Aerial Gunnery Range), and during General Patton's military training from 1942 to 1944, and during later training maneuvers in May, 1964, throughout the I-10 Corridor.

Cultural resources in the Southern California Desert Region have been primarily affected by past and currently approved projects through the ground disturbance that is required for construction of buildings, facilities, roads, and other infrastructure. Military training operations have been the most destructive, particularly at bombing ranges.

In the case of military installations and maneuvers, however, avoidance of substantial adverse changes to CRHR- and NRHP-eligible historic properties has been accomplished through deliberate project planning. Likewise, the severity of adverse effects to previously unknown cultural resources have been substantially reduced by a variety of strategies including implementing mitigation measures requiring construction monitoring, evaluation of cultural resources discovered during monitoring, and avoidance or data recovery for historic properties evaluated to be NRHP and CRHR-eligible.

Some of the physical evidence of military training exercises at the regional level are at least 50 years old and are therefore potentially CRHR- and NRHP-eligible historic properties. This is particularly the case for historic-period cultural resources associated with General Patton's Desert Training Center (DTC) described in detail in previous subsections. The use of heavy equipment and vehicles and the construction of camps, bunkers, and other features throughout the desert undoubtedly destroyed a number of prehistoric sites. In their place, we have a historic military district, with many individual resources that are known to be, or have the potential to be CRHR- or NRHP-eligible. Previous development within the region has already destroyed a number of DTC sites.

Impacts of Reasonably Foreseeable Future Projects

Cultural resources are also expected to be affected by the following reasonably foreseeable future projects. The future construction of residences and infrastructure in the local and regional cumulative analysis study areas will undoubtedly result in impacts to cultural resources. Some

of the projects included in this analysis may not be built. This analysis estimates the maximum number of cultural resources that may be destroyed.

I-10 Corridor

Numerous other projects are proposed and under consideration along the I-10 Corridor. It is assumed that the 15 proposed energy projects would destroy all of the cultural resources within the project limits for the purposes of this cumulative analysis. As discussed above, transmission lines are considered to have a smaller impact on cultural resources. Using the same conservative figures used previously, the 2 new transmission lines proposed for the I-10 Corridor would affect an area 20 feet wide and 48 miles long for each project (116 acres). When combined with the construction of 2 new substations, these linear projects would disturb 366 acres.

Together these reasonably foreseeable future projects would disturb 47,507 acres, or 39 percent of the total I-10 Corridor. This cumulative analysis suggests that these projects would destroy 903 cultural resources, 95 of which are likely to be CRHR- and NRHP-eligible historic properties.

Southern California Desert Region

Much of the Southern California Desert Region analyzed for this cumulative analysis consists of the CDCA. Eleven million acres of the 25-million-acre CDCA is managed by the BLM. Although there are undoubtedly other projects that have been proposed for this region, the projects proposed for construction within the BLM California Desert District make a reasonable proxy for patterns across the large area. Solar projects occupying 567,882 acres and wind projects occupying 433,721 acres have been proposed for this region, consisting of nearly 4 percent of the CDCA.

Although the cultural resources density per acre is unknown for this entire region, the density proposed for the I-10 Corridor serves as a reasonable minimum. The disturbance of 1 million acres would result in the destruction of at least 19,000 cultural resources, 2,000 of which are likely to be CRHR- and NRHP-eligible historic properties. If all of this construction took place, the majority of the projects would undergo CEQA and/or NEPA review. Cultural resources that could not be avoided would be tested to evaluate for NRHP eligibility, and eligible sites (historic properties) would be subject to historical documentation or data recovery excavations to mitigate effects. Although these measures would reduce most individual site effects, archaeological excavation and analysis cannot recover all the scientific values of a site. Based on the above, the cumulative loss of approximately 19,000 cultural resources is considered a substantial adverse effect that cannot be mitigated.

Construction of the solar and wind projects proposed throughout this region would result in substantial changes in the setting, feeling, and association of the areas in which they are constructed. These kinds of damages may be especially severe for traditional use areas and traditional cultural properties. Potential adverse effects would include direct effects in the form of physical disturbance or alteration as a result of construction activity or indirect effects in the form of diminished character and setting of traditional use areas due to the presence of industrial structures.

The Desert Harvest Solar Project in the Cumulative Context

The development of the DHSP, including Alternatives 4 through 7 and Alternatives C, D, and E, may result in permanent adverse effects to cultural resources related to construction activities

(Alternative B cumulative effects are described below). However, these adverse effects would be expected to contribute only a small amount to the possible permanent cumulative impacts related to cultural resources because relatively few resources may be eligible for the CRHR or NRHP. DHSP may have a substantial direct effect on 25 resources and an indirect effect on resources.

If the proposed mitigation measures CUL-1 through CUL-9 are properly implemented, the direct effects would be minimized from the DHSP. However, there would remain indirect adverse effects on one NRHP-listed historic district, one proposed historic district, segments of a prehistoric trail, and one historic archaeological site. Effects of the DHSP alternatives would additively combine with impacts from past, present, and reasonably foreseeable projects, and cumulative effects on cultural resources at both the local I-10 Corridor and regional levels would be substantial and adverse. This analysis estimates that more than 800 cultural resources within the I-10 Corridor, and 17,000 cultural resources within the Southern California Desert Region, will potentially be destroyed. Mitigation can reduce the impact of this destruction, but unavoidable adverse cumulative effects would remain.

Summary of Cumulative Impacts

Effects of the DHSP alternatives would additively combine with impacts from past, present, and reasonably foreseeable projects, and cumulative effects on cultural resources at both the local I-10 Corridor and regional levels would be substantial and adverse.

The majority of the proposed future projects examined in this analysis would likely undergo CEQA and/or NEPA review. Archaeological sites that could not be avoided would be tested to evaluate NRHP and CRHR eligibility. NRHP and CRHR-eligible historic properties would be subject to historical documentation or data recovery excavations to mitigate effects. Although these measures would reduce effects individual historic properties, archaeological excavation and analysis cannot recover all the scientific values of a site.

This analysis estimates that more than 900 cultural resources within the I-10 Corridor, and 17,000 cultural resources within the Southern California Desert Region, will potentially be destroyed. Some of these sites may be archaeological sites, some of these may be sites to which tribes attach cultural or religious significance, and some may be a combination of the two. The destruction of cultural resources results in the loss of information, but may also cause irreparable damage to the cultural and spiritual values of some resources. In terms of the loss of information, mitigation can reduce the impact of this destruction, but unavoidable adverse effects would remain. In terms of cultural and spiritual impacts, the nature of these impacts and potential mitigation measures can only be determined by members of the community who value the resources and landscapes, in this case Native Americans. Because only they can suggest possible mitigation, if any, this cumulative impact may be unavoidable.

Under the cumulative scenario for Alternative B, which considers that the DSSF gen-tie is constructed and the DHSP gen-tie is located on shared poles with no additional ground disturbance, the DHSP gen-tie would result in no net cumulative impacts on cultural resources in combination with the reasonably foreseeable DSSF gen-tie line. Alternative B would not contribute to cumulative effects.

4.6.16 CEQA Considerations

This section is included in this EIS and CDCA Plan Amendment for future use by CEQA Lead and Responsible agencies and is not required under NEPA.

CEQA Significance Criteria

The significance criteria listed below are from the Environmental Checklist Form in Appendix G of the CEQA Guidelines. They are used to determine whether the proposed project or alternatives would result in significant impacts under CEQA related to cultural resources. Under CEQA, the proposed project would cause a significant impact if it caused a substantial adverse change in the significance of a historical resource or an archeological resource as defined under CCR, Title 14, Chapter 3, Section 15064.5. The proposed project would have a significant impact on cultural resources if it would:

CR-1 Cause a substantial adverse change in the significance of a historical resource;

CR-2 Cause a substantial adverse change in the significance of an archaeological resource;

CR-3 Disturb any human remains, including those interred outside of formal cemeteries.

Under all of these criteria, adverse changes and impacts are the following:

- Physical, visual, or audible disturbances resulting from construction and development that would affect the integrity of a resource or the qualities that make it eligible for the CRHR or NRHP;
- Exposure of cultural resources to vandalism or unauthorized collecting;
- A substantial increase in the potential for erosion or other natural processes that could affect cultural resources;
- Neglect of a cultural resource that causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to a Native American tribe; or
- Transfer, lease, or sale of a cultural resource out of federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the resource's historic significance.

CEQA Significance Determination

Alternative 1. Under Alternative 1, the proposed DHSP would not be approved by the BLM, and BLM would not amend the CDCA Plan. As a result, the proposed solar energy project would not be constructed and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended. It is expected that the site would remain in its existing condition, with no new structures or facilities constructed or operated and no ground disturbance. No significant impacts to cultural resources would result from Alternative 1. Alternative 1 would not contribute to any significant cumulative impact, as defined in CEQA.

Alternative 2. Under Alternative 2, the proposed DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site available for future solar energy development. As a result, the proposed DHSP would not be constructed and BLM would manage the site consistent with the amended land use designation in the CDCA Land Use Plan.

Any future project would be reviewed under a separate NEPA analysis. No significant impacts to cultural resources would result from the DHSP. Alternative 2 would not contribute to any significant cumulative impact, as defined in CEQA.

Alternative 3. Under Alternative 3, the proposed DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site unavailable for future solar energy development. As a result, the proposed DHSP would not be constructed and BLM would manage the site consistent with the amended land use designation in the CDCA Land Use Plan. Any future project would be reviewed under a separate NEPA analysis. No significant impacts to cultural resources would result from the DHSP. Alternative 3 would not contribute to any significant cumulative impact, as defined in CEQA.

Alternative 4. Under Alternative 4, the Applicant's proposed solar facility site, the direct and indirect impacts of project construction, operation, and decommissioning, to cultural resources as described in Section 4.6.6 would be significant under criteria CR-1 (adverse change to significance of historic resources) and CR-2 (adverse change to significance of archaeological resources), above. Impacts significant under criteria CR-3 (disturbance of human remains) are possible, but not anticipated.

With implementation of Mitigation Measures MM CUL-1 through MM CUL-9, some of these impacts to cultural resources would be mitigated to less than significant levels under CEQA by: developing and implementing an MOA and HPTP that will guide all project cultural resources work, retaining a qualified cultural resources specialist to prepare the HPTP and implement it, training for all construction personnel, requiring expert monitoring of all ground disturbance, ensuring that cultural resources specialists have the authority to halt construction in the event of a discovery, treating inadvertent discoveries using the guidance of the MOA and HPTP, requiring documentation of interim results of the construction monitoring program, requiring final documentation of all discoveries during construction, and requiring curation for any cultural resources finds.

Under criterion CR-1, impacts of Alternative 4 would be less than significant with implementation of MM CUL-1 thorough MM CUL 10. Under criterion CR-2, impacts of Alternative 4 would be less than significant. Under criterion CR-3, Alternative 4 would have no impact.

In addition to implementation of Mitigation Measures CUL-1 through CUL-9, Mitigation Measure CUL-10 (Radio Program) is required to reduce indirect and cumulative impacts to the proposed DTC/C-AMA historic district (determined NRHP eligible) and WWII era archaeological site P-33-18392 (determined NRHP eligible). MM CUL-10 would only be required for CEQA Lead and Responsible agencies and is not required under NEPA.

MM CUL-10 Radio Program. A continuous loop radio program focused on motorists on I-10, an appropriate broadcasting location, and associated signage in Desert Center and on I-10 near Desert Center shall be developed, broadcast and installed. The radio program shall provide information about the North Chuckwalla Petroglyph District (CA-RIV-1383, NRHP-listed), the Coco-Maricopa trail segments (CA-RIV-0053T, determined eligible), and Native American values associated with these sites. Content shall be developed in consultation with all interested tribes. In addition, the program shall provide information about the DTC/C-AMA in general, archaeological site P-33-18392 in particular, and other details about Desert

Training Center activities in the Desert Center vicinity. The broadcast shall be maintained for the life of the project, and updated with relevant new information every five years.

The construction impacts of Alternative 4, when combined with impacts from past, present, and reasonably foreseeable projects, contribute in a small but significant way to the cumulatively considerable adverse impacts for cultural resources at both the local I-10 Corridor and regional levels.

Alternative 5. Under Alternative 5, the direct and indirect impacts of project construction, operation, and decommissioning, to cultural resources as described in Section 4.6.7 would be significant under criteria CR-1 (adverse change to significance of historic resources) and CR-2 (adverse chance to significance of archaeological resources), above. Impacts significant under criteria CR-3 (disturbance of human remains) are possible, but not anticipated.

With implementation of Mitigation Measures MM CUL-1 through MM CUL-10, some of these impacts to cultural resources would be mitigated to less than significant levels under CEQA by: developing and implementing an MOA and HPTP which will guide all project cultural resources work, retaining a qualified cultural resources specialist to prepare the HPTP and implement it, training for all construction personnel, requiring expert monitoring of all ground disturbance, ensuring that cultural resources specialists have the authority to halt construction in the event of an discovery, treating inadvertent discoveries using the guidance of the MOA and HPTP, requiring documentation of interim results of the construction monitoring program, requiring final documentation of all discoveries during construction, requiring curation for any cultural resources finds, and addressing impacts to the DTC/C-AMA historic district through a radio program for passing motorists on I-10.

Under criterion CR-1, impacts of Alternative 5 would be less than significant with implementation of MM CUL-1 thorough MM CUL 10. Under criterion CR-2, impacts of Alternative 5 would be less than significant. Under criterion CR-3, Alternative 5 would have no impact.

The construction impacts of Alternative 5, when combined with impacts from past, present, and reasonably foreseeable projects, contribute in a small but significant way to the cumulatively considerable adverse impacts for cultural resources at both the local I-10 Corridor and regional levels.

Alternative 6. Under Alternative 6, the direct and indirect impacts of project construction, operation, and decommissioning, to cultural resources as described in Section 4.6.8 would be significant under criteria CR-1 (adverse change to significance of historic resources) and CR-2 (adverse chance to significance of archaeological resources), above. Impacts significant under criteria CR-3 (disturbance of human remains) are possible, but not anticipated.

With implementation of Mitigation Measures MM CUL-1 through MM CUL-10, some of these impacts to cultural resources would be mitigated to less than significant levels under CEQA by: developing and implementing an MOA and HPTP which will guide all project cultural resources work, retaining a qualified cultural resources specialist to prepare the HPTP and implement it, training for all construction personnel, requiring expert monitoring of all ground disturbance, ensuring that cultural resources specialists have the authority to halt construction in the event of an discovery, treating inadvertent discoveries using the guidance of the MOA and HPTP, requiring documentation of interim results of the construction monitoring program, requiring final documentation of all discoveries during construction, requiring curation for any cultural resources

finds, and addressing impacts to the DTC/C-AMA historic district through a radio program for passing motorists on I-10.

Under criterion CR-1, impacts of Alternative 6 would be less than significant with implementation of MM CUL-1 thorough MM CUL 10. Under criterion CR-2, impacts of Alternative 6 would be less than significant. Under criterion CR-3, Alternative 6 would have no impact.

The construction impacts of Alternative 6, when combined with impacts from past, present, and reasonably foreseeable projects, contribute in a small but significant way to the cumulatively considerable adverse impacts for cultural resources at both the local I-10 Corridor and regional levels.

Alternative 7. Under Alternative 7, the direct and indirect impacts of project construction, operation, and decommissioning, to cultural resources as described in Section 4.6.8 would be significant under criteria CR-1 (adverse change to significance of historic resources) and CR-2 (adverse chance to significance of archaeological resources), above. Impacts significant under criteria CR-3 (disturbance of human remains) are possible, but not anticipated.

With implementation of Mitigation Measures MM CUL-1 through MM CUL-10, some of these impacts to cultural resources would be mitigated to less than significant levels under CEQA by: developing and implementing an MOA and HPTP which will guide all project cultural resources work, retaining a qualified cultural resources specialist to prepare the HPTP and implement it, training for all construction personnel, requiring expert monitoring of all ground disturbance, ensuring that cultural resources specialists have the authority to halt construction in the event of an discovery, treating inadvertent discoveries using the guidance of the MOA and HPTP, requiring documentation of interim results of the construction monitoring program, requiring final documentation of all discoveries during construction, requiring curation for any cultural resources finds, and addressing impacts to the DTC/C-AMA historic district through a radio program for passing motorists on I-10.

Under criterion CR-1, impacts of Alternative 7 would be less than significant with implementation of MM CUL-1 thorough MM CUL 10. Under criterion CR-2, impacts of Alternative 7 would be less than significant. Under criterion CR-3, Alternative 7 would have no impact.

The construction impacts of Alternative 7, when combined with impacts from past, present, and reasonably foreseeable projects, contribute in a small but significant way to the cumulatively considerable adverse impacts for cultural resources at both the local I-10 Corridor and regional levels.

Alternative A. Under Alternative A, no gen-tie line would be approved by the BLM, and BLM would not amend the CDCA Plan. As a result, the proposed gen-tie line would not be constructed and BLM would continue to manage the ROW consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended (including the Desert Sunlight amendment). It is expected that the Desert Sunlight gen-tie line would be built within the ROW, and that impacts to vegetation resources would be as described in the Desert Sunlight EIS (BLM 2011). No significant impacts to cultural resources would result from Alternative A. Alternative A would not contribute to any significant cumulative impact.

Alternative B. Under Alternative B, the Applicant's proposed gen-tie line, the direct and indirect impacts of project construction, operation, and decommissioning, to cultural resources as described in Section 4.6.11 would be significant under criteria CR-1 (adverse change to significance of historic resources) and CR-2 (adverse chance to significance of archaeological

resources), above. Impacts significant under criteria CR-3 (disturbance of human remains) are possible, but not anticipated.

With implementation of Mitigation Measures MM CUL-1 through MM CUL-10, some of these impacts to cultural resources would be mitigated to less than significant levels under CEQA by: developing and implementing an MOA and HPTP which will guide all project cultural resources work; retaining a qualified cultural resources specialist to prepare the HPTP and implement it; training for all construction personnel; requiring expert monitoring of all ground disturbance; ensuring that cultural resources specialists have the authority to halt construction in the event of a discovery; treating inadvertent discoveries using the guidance of the MOA and HPTP; requiring documentation of interim results of the construction monitoring program; requiring final documentation of all discoveries during construction; requiring curation for any cultural resources finds; and addressing indirect and cumulative impacts to the North Chuckwalla Petroglyph District, the Coco-Maricopa trail segments, the proposed DTC/C-AMA historic district, and WWII era archaeological site P-33-18392 through a radio program for passing motorists on I-10.

In addition to implementation of Mitigation Measures CUL-1 through CUL-9, CUL-10 (which would reduce indirect and cumulative impacts to the North Chuckwalla Petroglyph District [CA-RIV-1383, NRHP-listed], the Coco-Maricopa trail segments [CA-RIV-0053T, determined eligible], the proposed DTC/C-AMA historic district [determined NRHP eligible] and WWII era archaeological site P-33-18392 [determined NRHP eligible]) would be required to reduce impacts to the extent feasible, and Mitigation Measure CUL-11 (Avoid Known Resources) is required to ensure protection of known historical resources (eligible for the CRHR) and unevaluated cultural resources (potentially eligible for the CRHR), and to reduce potential impacts to these resources to a less than significant level. The Desert Center Town Dump (CA-Riv-9385, determined NRHP eligible) is too large to avoid. However, data recovery has been conducted at this site as part of mitigation of impacts associated with the Desert Sunlight Solar Project. The proposed impacts of the DHSP are in the same portion of the site. BLM and the County agree that mitigation conducted by other parties is considered sufficient to address the impacts of both projects. Avoidance of only certain portions of this site is required. MM CUL-11 would only be required for CEQA Lead and Responsible agencies and is not required under NEPA.

MM CUL-11 Avoid Known Resources. Known historical resources (eligible for CRHR) and unevaluated cultural resources (potentially eligible for the CRHR) shall be flagged and avoided. In addition, at any known historical resource within 165 feet (50 meters) of the project area, the limits of the project area near the resource shall be marked with visible flagging tape prior to construction. The construction crews shall be instructed that no vehicle access, travel, equipment staging, storage, or other construction-related work shall occur outside the flagged areas to ensure that known historic resources are not inadvertently damaged during implementation of the project. Within the boundaries of the Desert Center Town Dump (CA-Riv-9385) the limits of the project area shall be marked as described above, ensuring that no construction-related work shall occur within site boundaries other than strictly within the marked project area.

However, some impacts, particularly to the setting of the North Chuckwalla Petroglyph District (CA-RIV-1383, NRHP-listed) and the Coco-Maricopa trail segments (CA-RIV-0053T, determined eligible), are unavoidable and significant under CEQA.

Under criterion CR-1, impacts of Alternative B would be less than significant with implementation of MM CUL-1 thorough MM CUL 11. Under criterion CR-2, impacts of Alternative B would be significant and unavoidable. Under criterion CR-3, Alternative B would have no impact.

The construction impacts of Alternative B, when combined with impacts from past, present, and reasonably foreseeable projects, contribute in a small but significant way to the cumulatively considerable adverse impacts for cultural resources at both the local I-10 Corridor and regional levels.

Alternative C. Under Alternative C, the direct and indirect impacts of project construction, operation, and decommissioning, to cultural resources as described in Section 4.6.12 would be significant under criteria CR-1 (adverse change to significance of historic resources) and CR-2 (adverse chance to significance of archaeological resources), above. Impacts significant under criteria CR-3 (disturbance of human remains) are possible, but not anticipated.

With implementation of Mitigation Measures MM CUL-1 through MM CUL-11, some of these impacts to cultural resources would be mitigated to less than significant levels under CEQA by: developing and implementing an MOA and HPTP which will guide all project cultural resources work; retaining a qualified cultural resources specialist to prepare the HPTP and implement it; training for all construction personnel; requiring expert monitoring of all ground disturbance; ensuring that cultural resources specialists have the authority to halt construction in the event of a discovery; treating inadvertent discoveries using the guidance of the MOA and HPTP; requiring documentation of interim results of the construction monitoring program; requiring final documentation of all discoveries during construction; requiring curation for any cultural resources finds; addressing indirect and cumulative impacts to the North Chuckwalla Petroglyph District, the Coco-Maricopa trail segments, and the proposed DTC/C-AMA historic district, through a radio program for passing motorists on I-10; and avoiding all known resources within the project area except CA-Riv-9385; and avoiding known historical resources and unevaluated cultural resources.

However, some impacts, particularly to the setting of the North Chuckwalla Petroglyph District (CA-RIV-1383, NRHP-listed) and the Coco-Maricopa trail segments (CA-RIV-0053T, determined eligible), are unavoidable and significant under CEQA.

Under criterion CR-1, impacts of Alternative C would be less than significant with implementation of MM CUL-1 thorough MM CUL 11. Under criterion CR-2, impacts of Alternative C would be significant and unavoidable. Under criterion CR-3, Alternative C would have no impact.

The construction impacts of Alternative C, when combined with impacts from past, present, and reasonably foreseeable projects, contribute in a small but significant way to the cumulatively considerable adverse impacts for cultural resources at both the local I-10 Corridor and regional levels.

Alternative D. Under Alternative D, the direct and indirect impacts of project construction, operation, and decommissioning, to cultural resources as described in Section 4.6.13 would be significant under criteria CR-1 (adverse change to significance of historic resources) and CR-2 (adverse chance to significance of archaeological resources), above. Impacts significant under criteria CR-3 (disturbance of human remains) are possible, but not anticipated.

With implementation of Mitigation Measures MM CUL-1 through MM CUL-11, some of these impacts to cultural resources would be mitigated to less than significant levels under CEQA by: developing and implementing an MOA and HPTP which will guide all project cultural resources work; retaining a qualified cultural resources specialist to prepare the HPTP and implement it; training for all construction personnel; requiring expert monitoring of all ground disturbance; ensuring that cultural resources specialists have the authority to halt construction in the event of a discovery; treating inadvertent discoveries using the guidance of the MOA and HPTP; requiring documentation of interim results of the construction monitoring program; requiring final documentation of all discoveries during construction; requiring curation for any cultural resources finds; addressing indirect and cumulative impacts to the North Chuckwalla Petroglyph District, the Coco-Maricopa trail segments, the proposed DTC/C-AMA historic district, and WWII era archaeological site P-33-18392 through a radio program for passing motorists on I-10; and avoiding all known resources within the project area except CA-Riv-9385; and avoiding known historical resources and unevaluated cultural resources.

However, some impacts, particularly to the setting of the North Chuckwalla Petroglyph District (CA-RIV-1383, NRHP-listed) and the Coco-Maricopa trail segments (CA-RIV-0053T, determined eligible), are unavoidable and significant under CEQA.

Under criterion CR-1, impacts of Alternative D would be less than significant with implementation of MM CUL-1 thorough MM CUL 11. Under criterion CR-2, impacts of Alternative D would be significant and unavoidable. Under criterion CR-3, Alternative D would have no impact.

The construction impacts of Alternative D, when combined with impacts from past, present, and reasonably foreseeable projects, contribute in a small but significant way to the cumulatively considerable adverse impacts for cultural resources at both the local I-10 Corridor and regional levels.

Alternative E. Under Alternative E, the direct and indirect impacts of project construction, operation, and decommissioning, to cultural resources as described in Section 4.6.14 would be significant under criteria CR-1 (adverse change to significance of historic resources) and CR-2 (adverse chance to significance of archaeological resources), above. Impacts significant under criteria CR-3 (disturbance of human remains) are possible, but not anticipated.

With implementation of Mitigation Measures MM CUL-1 through MM CUL-11, some of these impacts to cultural resources would be mitigated to less than significant levels under CEQA by: developing and implementing an MOA and HPTP which will guide all project cultural resources work; retaining a qualified cultural resources specialist to prepare the HPTP and implement it; training for all construction personnel; requiring expert monitoring of all ground disturbance; ensuring that cultural resources specialists have the authority to halt construction in the event of a discovery; treating inadvertent discoveries using the guidance of the MOA and HPTP; requiring documentation of interim results of the construction monitoring program; requiring final documentation of all discoveries during construction; requiring curation for any cultural resources finds; addressing indirect and cumulative impacts to the North Chuckwalla Petroglyph District, the Coco-Maricopa trail segments, and the proposed DTC/C-AMA historic district, through a radio program for passing motorists on I-10; and avoiding all known resources within the project area except CA-Riv-9385; and avoiding known historical resources and unevaluated cultural resources.

However, some impacts, particularly to the setting of the North Chuckwalla Petroglyph District (CA-RIV-1383, NRHP-listed) and the Coco-Maricopa trail segments (CA-RIV-0053T, determined eligible), are unavoidable and significant under CEQA.

Under criterion CR-1, impacts of Alternative E would be less than significant with implementation of MM CUL-1 thorough MM CUL 11. Under criterion CR-2, impacts of Alternative E would be significant and unavoidable. Under criterion CR-3, Alternative E would have no impact.

The construction impacts of Alternative E, when combined with impacts from past, present, and reasonably foreseeable projects, contribute in a small but significant way to the cumulatively considerable adverse impacts for cultural resources at both the local I-10 Corridor and regional levels.

4.7 PALEONTOLOGY

Most impacts on paleontological resources are direct and result from ground disturbance activities. Indirect impacts include the potential for increased unauthorized collection of fossils and other paleontological resources resulting from increased numbers of people in the vicinity (i.e., personnel involved in construction and operation of proposed project facilities). Areas with high potential for paleontological resources are evaluated for the amount and type of disturbance and activities that would result in impacts on paleontological resources.

4.7.1 Methodology for Analysis

A Potential Fossil Yield Classification (PFYC) for paleontological resources (Roeder 2011) and two paleontological resources assessments were prepared (Roeder 2012a, 2012b) for the Desert Harvest Solar Project (DHSP). Correspondence from the Natural History Museum of Los Angeles County and the University of California at Berkeley Museum of Paleontology (UCMP) were reviewed for information regarding known fossil localities and stratigraphic unit sensitivity within the proposed project area. All research was conducted in accordance with BLM and the Society for Vertebrate Paleontology's accepted assessment protocol to determine whether any known paleontological resources exist in the general area and how they might be impacted by the Proposed Action and action alternatives. As noted in Section 3.1, lack of access to Metropolitan Water District of Southern California (MWDSC) lands has prohibited full surveys of all gen-tie alternatives. Given site constraints, however, this circumstance is allowed under NEPA.

4.7.2 Applicant Measures

The following Applicant Measure (AM) has been incorporated as a design feature of the proposed project and all action alternatives to reduce adverse impacts associated with the project.

AM-PAL-1 The Applicant shall be responsible for the following measures:

- A qualified paleontologist will conduct a study to further characterize the paleontological sensitivity of the project study area.
- Prior to construction the Applicant will retain a qualified Project Paleontologist to design and implement a mitigation program during project-related earth-moving activities. The paleontological resource mitigation program will include the preparation of mitigation and monitoring plan for construction monitoring; emergency discovery procedures; sampling and data recovery, if needed; museum storage coordination for any specimen and data recovered; pre-construction coordination; and reporting.
- Construction personnel involved with earth-moving activities will be informed by the Project Paleontologist of the possibility of encountering fossils, how to identify fossils, and proper notification procedures. This worker training will be prepared and presented by a qualified paleontologist. A construction contractor superintendent will be identified and provided with contact information for notifying the Project Paleontologist if any potential paleontological resources are encountered during construction.
- Grading and excavation within old alluvium or earthmoving at depths greater than 10 feet should be monitored by a qualified paleontologist, along with older alluvium which occurs at depths less than 10 feet.

The mitigation measures below further clarify or expand upon the AM above, as it relates to reporting requirements, timing of implementation, or other details. Where there is a conflict between provisions of the mitigation measures imposed and the preceding AM, the mitigation measures take precedence.

4.7.3 Alternative 1 – No Action (No Plan Amendment)

Under Alternative 1, the proposed DHSP would not be approved by the BLM, and BLM would not amend the CDCA Plan. As a result, no solar energy project would be constructed on the project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no ground disturbance. As a result, impacts would not occur.

4.7.4 Alternative 2 – No Project Alternative (with Plan Amendment to Find the Site Suitable for Solar Energy Development)

Under Alternative 2, the proposed DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site available for future solar energy development. As a result, the DHSP would not be constructed on the project site and BLM would manage the site consistent with the amended land use designation in the CDCA Land Use Plan. No impacts from the DHSP would occur.

4.7.5 Alternative 3 – No Project Alternative (with Plan Amendment to Find the Site Unsuitable for Solar Energy Development)

Under Alternative 3, the DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site unavailable for future solar energy development. As a result, the DHSP would not be constructed on the project site and BLM would manage the site consistent with the amended land use designation in the CDCA Land Use Plan. No impacts from the DHSP would occur.

4.7.6 Alternative 4 – Proposed Solar Project

Under Alternative 4, the proposed DHSP solar facility would be approved by BLM, and the BLM would amend the CDCA Plan to make the proposed site available for future solar energy developments. A 150 megawatt solar generating facility would then be built on two parcels, the northern parcel consisting of 1,052 acres and the southern parcel consisting of 155 acres. Alternative 4 would impact at least one previously identified fossil locality consisting of Gopherus (tortoise) found in the Quaternary alluvium in the eastern portion of the solar facility. The geologic unit underlying these two parcels is Quaternary alluvium (Qal) and possibly Quaternary-Tertiary playa sediments (QT), both of which have been assigned a Class 4-High sensitivity rating under the BLM PYFC. As such, there is a possibility that as-yet-unidentified significant paleontological resources could be adversely affected.

Construction

Direct Effects

The geologic units present at the site have a high potential to contain vertebrate fossils and other scientifically valuable paleontological resources. The physical disturbance of the geologic units present at the site during construction of the solar facility could directly impact (i.e., damage or destroy) any fossils that might be present. Therefore, the potential for adverse direct effects on paleontological resources is high.

Mitigation Measure (MM) PAL-1 (Project Paleontological Staff) outlines the qualifications of all individuals conducting paleontological work within the proposed project area; MM PAL-2 (Paleontological Mitigation and Monitoring Plan) outlines the details of how monitoring and mitigation would be conducted for the disturbance of undisturbed strata in rock units of high sensitivity; MM PAL-3 (Authority to Halt Ground Disturbance) emphasizes the authority of paleontological staff to halt construction equipment if necessary; MM PAL-4 (Paleontological Worker Environmental Awareness Program) would require training of all construction personnel; MM PAL-5 (Construction Monitoring for Paleontological Resources) would require full-time monitoring of undisturbed rock strata of high sensitivity; MM PAL-6 (Paleontological Reporting) outlines how and when the results of paleontological monitoring and mitigation is reported; MM PAL-7 (Curation of Paleontological Materials) specifies how and when any fossils or related documentation should be stored after it is collected; and MM PAL-8 (Pre-construction Paleontological Subsurface Excavation) outlines field work and laboratory analysis necessary prior to construction in a project area underlain completely by rock strata of high paleontological sensitivity. Together these mitigation measures would minimize the potential for direct impacts from solar facility construction to paleontological resources.

Indirect Effects

The geologic units present at the site have a high potential to contain vertebrate fossils and other scientifically valuable paleontological resources. Indirect effects include the potential for increased unauthorized collection of fossils and other paleontological resources resulting from increased numbers of people in the vicinity. Project construction would increase the number of personnel in the project area. Therefore, the potential for adverse indirect effects on paleontological resources is high. Mitigation Measure MM PAL-4 (Paleontological Worker Environmental Awareness Program) would require training of all construction personnel, and would minimize the potential for indirect impacts from solar facility construction to fossil resources.

Operation and Maintenance

Direct Effects

Operations would not disturb any previously undisturbed areas of the solar facility site. No direct effects to paleontological resources associated with operation and maintenance of Alternative 4 would occur.

Indirect Effects

The geologic units present at the site have high potential to contain vertebrate fossils and other scientifically valuable paleontological resources; however, the density of surface deposits of

scientifically significant fossils is expected to be low. Indirect impacts that may occur during operation and maintenance of Alternative 4 include the potential for increased unauthorized collection of fossils and other paleontological resources resulting from increased numbers of visitors in the vicinity of the solar facility. While no visitor center is proposed as a part of the solar facility, and visitors would not typically be allowed onto the site, there is the potential for the solar facility to attract a small number of visitors who would drive and park along the periphery of the solar facility, within the gen-tie ROW and the vicinity, particularly during the first few years of operation. In the absence of a visitor center, visitation is expected to be low. In addition, the density of surface deposits of scientifically significant fossils is expected to be low. Finally, any rare fossils exposed on the surface of the approved gen-tie corridor will be collected by a qualified paleontologist during implementation of MM PAL-5 (Construction Monitoring for Paleontological Resources). The potential for indirect effects from operation and maintenance of Alternative 4 on paleontological resources is therefore low, and no mitigation is necessary.

Decommissioning

Direct Effects

The geologic units present at the site have a high potential to contain vertebrate fossils and other scientifically valuable paleontological resources. While a majority of rare fossils and other significant paleontological resources would be identified during surface-disturbing activities associated with construction, decommissioning activities may not be limited to disturbing only previously disturbed soils, and excavation for electrical wiring and steel support beams may occur to a deeper depth than excavation during construction. The physical disturbance of the geologic units present at the site during decommissioning of the solar facility could directly impact (i.e., damage or destroy) any fossils that might be present in remaining undisturbed soils. Therefore, the potential for direct impacts on paleontological resources is high. All mitigation measures PAL-1 through PAL-8 would be required during decommissioning of the solar facility.

Indirect Effects

Indirect effects from decommissioning of the solar facility are identical to those during construction (unauthorized fossil collection by personnel). MM PAL-4 (Paleontological Worker Environmental Awareness Program) would require training of all decommissioning personnel, and would minimize the potential for indirect impacts to fossil resources from Alternative 4 decommissioning.

Mitigation Measures

The following mitigation measures would reduce potential adverse effects to paleontological resources.

MM PAL-1 Project Paleontological Staff.

Project Paleontologist – Prior to the issuance of a Notice to Proceed by BLM, a qualified paleontologist approved by the BLM to serve as Project Paleontologist shall be retained by the project owner. This individual shall retain a BLM paleontological resource use permit for the project and a paleontological permit from the County of Riverside. To do so this individual shall have the following qualifications as stipulated in BLM Manual 8270-1:

a. Professional instruction in a field of paleontology relevant to the work proposed (vertebrate, invertebrate, trace, paleobotany, etc.), obtained through:

   (1) Formal education resulting in a graduate degree from an accredited institution in paleontology, or in geology, biology, botany, zoology or anthropology if the major emphasis is in paleontology; OR

   (2) Equivalent paleontological training and experience including at least 24 months under the guidance of a professional paleontologist who meets qualification above that provided increased responsibility leading to professional duties similar to those in qualification above; and

b. Demonstrated experience in collecting, analyzing, and reporting paleontological data, similar to the type and scope of work proposed in the application;

c. Demonstrated experience in planning, equipping, staffing, organizing, and supervising crews performing the work proposed in the application;

d. Demonstrated experience in carrying paleontological projects to completion as evidenced by timely completion and/or publication of theses, research reports, scientific papers and similar documents.

The resume of the proposed Project Paleontologist will be submitted to BLM, in consultation with the BLM regional paleontologist, for review and approval.

As described in BLM IM 2009-011, the Project Paleontologist will serve as the Principal Investigator (PI) under the BLM permit and is responsible for all actions under the permit, for meeting all permit terms and conditions, and for the performance of all other personnel. This person is also the contact person for the project proponent and the BLM.

Additional Paleontological Staff – The Project Paleontologist may obtain the services of Paleontological Field Agents, Field Monitors, and Field Assistants, if needed, to assist in mitigation, monitoring, and curation activities. These individuals must meet the qualifications described in BLM IM 2009-011, and their resumes must be reviewed and approved by BLM prior to beginning work.

MM PAL-2 **Paleontological Mitigation and Monitoring Plan (PMMP).** Prior to the issuance of a Notice to Proceed by BLM, the Project Paleontologist shall submit a Paleontological Mitigation and Monitoring Plan (PMMP) for the project to the BLM for review and approval. The appropriate Paleontology Lead or Regional Paleontologist shall review the plan for sufficiency prior to acceptance. The PMMP shall be prepared and implemented under the direction of the Project Paleontologist and shall address and incorporate MM PAL-1 through MM PAL-8. The PMMP shall be prepared at the sole expense of the project proponent, and be based on Society of Vertebrate Paleontology (SVP) assessment and mitigation guidelines and meet all BLM and Riverside County regulatory requirements. A monitoring plan indicates the avoidance or treatments recommended for the area of the proposed disturbance and must minimally address the following:

1. Identification and mapping of impact areas of high sensitivity that will be monitored during construction;

2. A coordination strategy to ensure that a qualified paleontologist (MM PAL-1) will conduct monitoring at the appropriate locations at the appropriate intensity;
3. The significance criteria to be used to determine which resources will be avoided or recovered for their data potential;
4. Procedures for the discovery, recovery, preparation, and analysis of paleontological resources encountered during construction, in accordance with standards for recovery established by the SVP and the BLM;
5. Provisions for verification that the project proponent has an agreement with a recognized museum repository, for the disposition of recovered fossils and that the fossils shall be prepared prior to submittal to the repository as required by the repository (e.g., prepared, analyzed at a laboratory, curated, or cataloged);
6. Specifications that all paleontological work undertaken by the project proponent on public land shall be carried out by qualified paleontologists with appropriate current permits (MM PAL-1), including but not limited to a Paleontological Resources Use Permit (for work on public lands administered by BLM) and a Riverside County permit (for work on lands administered by the County of Riverside);
7. Description of monitoring reports that will be prepared which shall include daily logs, monthly reports, and a final monitoring report with an itemized list of specimens found to be submitted to the BLM, the Riverside County Planning Department, the project proponent and the designated repository within 90 days of the completion of monitoring;
8. The implementation sequence and the estimated time frames needed to accomplish all project-related tasks during the ground-disturbance and post-ground–disturbance analysis phases of the project shall be specified; and
9. Person(s) expected to perform each of the tasks, their responsibilities, and the reporting relationships between project construction management and the mitigation and monitoring team shall be identified.
10. All impact-avoidance measures (such as flagging or fencing) to prohibit or otherwise restrict access to sensitive resource areas that are to be avoided during ground disturbance, construction, and/or operation shall be described. Any areas where these measures are to be implemented shall be identified. The description shall address how these measures would be implemented prior to the start of ground disturbance and how long they would be needed to protect the resources from project-related impacts.

MM PAL-3 **Authority to Halt Ground Disturbance.** As specified in BLM IM 2009-011, if significant fossil material is discovered during construction activities, the Project Paleontologist, Field Agents, and Field Monitors have the authority to temporarily halt surface disturbing actions until an assessment of the find is completed and appropriate protection measures taken. The length of time ground disturbance

will be halted, the size of the area where work is halted, and the details of the assessments and treatments are described in detail in the PMMP (MM PAL–2). Work may not resume until approval is granted from both the Project Paleontologist and the BLM Authorized Officer.

MM PAL-4 **Paleontological Worker Environmental Awareness Program (WEAP).** Prior to issuing a BLM Notice to Proceed, the project proponent shall submit evidence of that WEAP training has been provided to construction supervisors and crew to ensure their awareness of requirements regarding the protection of paleontological resources and procedures to be implemented in the event fossil remains are encountered by ground-disturbing activities. This training will be prepared by the Project Paleontologist (MM PAL-1), reviewed and approved by the BLM, and presented by a qualified paleontologist. All construction supervisors and crew-members shall be required to undergo paleontological WEAP training prior to commencement of ground-disturbing activities or prior to beginning work on the project site. WEAP training shall also be required for decommissioning personnel.

MM PAL-5 **Construction Monitoring for Paleontological Resources.** The project proponent shall continuously comply with the following during all ground disturbing activities during project construction and operations:

1. If project ground-disturbing activities will affect previously undisturbed strata in rock units of high potential (Class 4 or higher), specifically Quaternary Alluvium, Quaternary Sand, Quaternary Nonmarine Sediments, Quaternary Lake Deposits, and Quaternary-Tertiary Lake Deposits, full time monitoring by the Project Paleontologist or other qualified paleontologist will be required.
2. Construction activities shall be diverted when data recovery of significant fossils is warranted, as determined by the Project Paleontologist. Monitoring shall be conducted as follows:
    a. Monitoring of ground disturbance shall consist of the surface collection of visible vertebrate and significant invertebrate fossils within the project site. Upon discovery of paleontological resources by paleontologists or construction personnel, work in the immediate area of the find shall be halted and diverted and the Project Paleontologist shall be notified. Once the find has been inspected and a preliminary assessment has been made, the Project Paleontologist will notify the BLM and the County of Riverside Planning Department of the discovery within 24 hours. If recovery of a large or unusually productive fossil occurrence is warranted, earth-moving activities shall be diverted temporarily around the fossil locality, and a recovery crew shall be mobilized to remove the material as quickly as possible. The monitor shall be permitted to photograph and/or draw stratigraphic profiles of cut surfaces and take samples for analysis of microfossils, dating, or other specified purposes in accordance with the PMMP (MM PAL-2).
    b. Recovered specimens shall be prepared to a point of identification, including washing of sediments to recover smaller fossil remains. Once excavation has reached specified depths, salvage of fossil material from the side

walls of the cut shall resume. Specimens shall be identified and curated into a repository with retrievable storage (MM PAL-7).

c. All significant fossil specimens recovered from the project site as a result of the paleontological monitoring and mitigation program shall be treated (prepared, identified, curated, and cataloged) in accordance with the designated repository requirements. Samples shall be submitted to a laboratory, acceptable to the designated repository, for identification, dating, and microfossil and pollen analysis.

Construction monitoring or spot checking as appropriate, shall also be required for the decommissioning period.

MM PAL-6 **Paleontological Reporting.** The Project Paleontologist shall document the results of the construction monitoring program with daily monitoring reports, monthly progress reports and a final report submitted to BLM, the state regulatory agency, the designated repository and the project proponent as outlined in the PMMP (MM PAL-2). All reports shall be prepared in accordance with BLM, Society of Vertebrate Paleontology guidelines, and state regulatory agency requirements. Reporting shall also be required for the decommissioning period if any new fossils are identified during monitoring of decommissioning activities.

Daily and monthly reporting will include at a minimum a completed BLM locality form 8270-3 or equivalent for each new locality using 1:24000 scale maps with new localities plotted.

Upon completion of all field work, a final report of the monitoring and mitigation conducted must be submitted to the BLM and the County of Riverside Planning Department for review and approval. At a minimum the final report must include the following details as specified by BLM IM 2009-011:

1. Name, affiliation, address, date of report, and permit number (if consultant) of the paleontologist doing the survey.
2. Project name and number (if used), name of proponent, and general location of project.
3. Date(s) of the survey and names of any personnel assisting with the survey.
4. Brief description of project and expected impacts to paleontological resources.
5. A summary of mitigation performed.
6. A summary of findings, including important discoveries.
7. A description of potentially fossiliferous areas to allow for future assessment of sites, even if no fossils were located during the project monitoring.
8. A completed BLM locality form 8270-3 or equivalent for each new locality using Universal Transverse Mercator (UTM) NAD 83 coordinates, and 1:24000 scale maps with new localities plotted using points or polygons as appropriate. Locality forms, maps, and any other information containing specific fossil locations should be bound separately or assembled as a separate section to allow for preservation of confidential locality data.

9. List of specimen field numbers and field identifications of collected material, cross-referenced to the locality field number.

MM PAL-7 **Curation of Paleontological Materials.** Prior to issuing a BLM Notice to Proceed, as specified by BLM Manual 8270-1 the project proponent shall submit written certification from a repository willing to accept the collections and other materials resulting from work done for the project. The project owner shall curate the fossil collections, provide appropriate field and laboratory documentation, and complete the final Paleontological Resource Recovery Report within 90 days from the completion of monitoring. Curation and documentation shall also be required for the decommissioning period if any new fossils are identified during monitoring of decommissioning activities.

MM PAL-8 **Pre-construction Paleontological Subsurface Excavation.** Prior to issuing a BLM Notice to Proceed, the Project Paleontologist shall submit a Pre-construction Subsurface Excavation Plan, prepared consistent with SVP guidelines, for the project to the BLM for review and approval. The Plan shall be prepared and implemented under the direction of the Project Paleontologist. Implementation of the Plan shall be complete prior to the completion of the PMMP so that the resulting information can guide the project mitigation and monitoring strategy. The Plan shall be prepared and implemented at the sole expense of the project proponent, and be consistent with SVP guidelines and meet all BLM and Riverside County regulatory requirements. The subsurface excavation plan is intended to be consistent with SVP guidance for project areas with high paleontological sensitivity and the potential for presence of soil units likely to contain micro-vertebrate fossils (paleosols). Subsurface excavation shall take place in a minimum of 10 locations within the project area, with at least one excavation in each proposed solar field (as applicable), with the remainder placed along the chosen gen-tie line alternative at the discretion of the Project Paleontologist. Trench walls shall be examined and documented by a qualified paleontologist. Small samples from each trench shall be screened through mesh fine enough to collect micro-vertebrate fossils. A minimum of 10 fossils or soil humate samples, as appropriate, shall be collected and shall be subjected to AMS radiocarbon dating. Upon completion of all field work and laboratory analysis, a letter report describing the results of the subsurface excavation must be submitted to the BLM and the County of Riverside Planning Department for review and approval. The results shall be incorporated into the PMMP.

Residual Impacts and Unavoidable Adverse Effects

No residual impacts or unavoidable adverse effects on paleontological resources under Alternative 4 have been identified.

4.7.7 Alternative 5 – Solar Project Excluding WHMA

Alternative 5 would remain in the same location as Alternative 4 and would use the same project boundaries as Alternative 4 except that it would exclude the portion of the site within the Palen-Ford Wildlife Habitat Management Area (WHMA). Alternative 5 would affect the same fossil

locality as Alternative 4, and the disturbed area would be only marginally smaller. In addition, there is a high probability that as-yet-unidentified resources could be affected.

Construction

Direct and Indirect Effects

The effects resulting from constructing Alternative 5 would be the same as those discussed under Alternative 4.

Operation and Maintenance

Direct and Indirect Effects

The effects resulting from the operation and maintenance of Alternative 5 would be the same as those discussed under Alternative 4.

Decommissioning

Direct and Indirect Effects

The effects resulting from the decommissioning of Alternative 5 would be the same as those discussed under Alternative 4.

Mitigation Measures

Mitigation measures MM PAL-1 through MM PAL-8, as described above, would minimize potential adverse project effects to paleontological resources.

Residual Impacts and Unavoidable Adverse Effects

No residual impacts or unavoidable adverse effects on paleontological resources under Alternative 5 would occur.

4.7.8 Alternative 6 – Reduced Footprint Solar Project

Alternative 6 would remain in the same location as Alternative 4 and would use the same project boundaries as Alternative 4 except that it would exclude the southern parcel. This alternative would encompass 1,044 acres. Alternative 6 would affect the same fossil locality as Alternative 4. In addition, there is a high probability that as-yet-unidentified resources could be impacted. However, a reduced footprint would likely reduce the total number of paleontological resources impacted.

Construction

Direct and Indirect Effects

The severity of adverse effects resulting from the construction of Alternative 6 would be the same, but the magnitude of effects would be reduced when compared to those discussed under Alternative 4.

Operation and Maintenance

Direct and Indirect Effects

The severity of adverse effects resulting from the operation and maintenance of Alternative 6 would be the same, but the magnitude of effects would be reduced when compared to those discussed under Alternative 4.

Decommissioning

Direct and Indirect Effects

The severity of adverse effects resulting from decommissioning of Alternative 6 would be the same, but the magnitude of effects would be reduced when compared to those discussed under Alternative 4.

Mitigation Measures

Mitigation measures MM PAL-1 through MM PAL-8, as described above, would minimize potential adverse project effects to paleontological resources.

Residual Impacts and Unavoidable Adverse Effects

No residual impacts or unavoidable adverse effects on paleontological resources under Alternative 6 would occur.

4.7.9 Alternative 7 – High-Profile Reduced Footprint Solar Project

Alternative 7 would be constructed within the same project boundaries as Alternative 6. Alternative 7 would encompass an estimated 1,044 acres and would be an estimated 125 to 135 MW nominal capacity project. Project details are the same as for Alternative 4, with the only exception being the overall height of the panels for Alternative 7. Alternative 7 would use high-profile single-axis tracking panels that would have a total height of 15 feet. Alternative 7 would affect the same fossil locality as Alternative 4. In addition, there is a high probability that as-yet-unidentified resources could be impacted. However, a reduced footprint would likely reduce the total number of paleontological resources impacted.

Construction

Direct and Indirect Effects

The severity of adverse effects resulting from the construction of Alternative 7 would be the same, but the magnitude of effects would be reduced when compared to those discussed under Alternative 4.

Operation and Maintenance

Direct and Indirect Effects

The severity of adverse effects resulting from the operation and maintenance of Alternative 7 would be the same, but the magnitude of effects would be reduced when compared to those discussed under Alternative 4.

Decommissioning

Direct and Indirect Effects

The severity of adverse effects resulting from decommissioning of Alternative 7 would be the same, but the magnitude of effects would be reduced when compared to those discussed under Alternative 4.

Mitigation Measures

Mitigation measures MM PAL-1 through MM PAL-8, as described above, would minimize potential adverse project effects to paleontological resources.

Residual Impacts and Unavoidable Adverse Effects

No residual impacts or unavoidable adverse effects on paleontological resources under Alternative 7 would occur.

4.7.10 Alternative A – No Gen-Tie

Under Alternative A, the proposed DHSP gen-tie would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site either available or unavailable for future solar energy development. As a result, the DHSP gen-tie would not be constructed. The lack of a gen-tie would prevent the rest of the project from being constructed as well. The BLM would manage the site consistent with the amended land use designation in the CDCA Land Use Plan. No impacts from the DHSP would occur.

4.7.11 Alternative B – Proposed Gen-Tie (Shared Towers)

Alternative B would exit the southwest portion of the solar facility site, run south along the west side of Kaiser Road, turn east just north of Desert Center, and run south across I-10 to the Red Bluff Substation. The transmission corridor would cover a total length of 12.06 miles with a 160-foot wide corridor plus 450-foot radial stringing areas at each turn. Under this alternative, towers would be shared with the Desert Sunlight Solar Project along the A-1 alignment should that gen-tie line ultimately be constructed; however, the analysis for direct and indirect effects on paleontological resources assumes that complete construction of Alternative B would occur independent of whether the Desert Sunlight gen-tie ultimately is constructed. For combined effects of the two gen-ties, see the cumulative effects analysis in Section 4.7.13. Alternative B would impact at least one previously identified fossil locality consisting of a possible pelvis fragment from a large mammal found in the Quaternary alluvium at the southern end of this gen-tie alternative. The potential for specific components of Alternative B to affect this resource cannot be determined until final engineering and micro-siting is completed. This alternative is underlain by three Class 4-High sensitivity geologic rock units (Pleistocene nonmarine deposits, older Pleistocene nonmarine deposits, Quaternary alluvium). As such, there is a possibility that as-yet-unidentified significant paleontological resources could be located there and, as a result, have the potential to be adversely affected by Alternative B. As stated in Section 3.1, portions of Alternative B have not been surveyed due to site constraints, and additional resources could exist there.

Construction

Direct Effects

The geologic units present at the site have a high potential to contain vertebrate fossils and other scientifically valuable paleontological resources. The physical disturbance of these units during construction of Alternative B has a high potential for direct adverse effects (i.e., to damage or destroy any fossils) for any paleontological resources that might be present along the route.

Mitigation Measure (MM) PAL-1 (Project Paleontological Staff) outlines the qualifications of all individuals conducting paleontological work within the project area; MM PAL-2 (Paleontological Mitigation and Monitoring Plan) outlines the details of how monitoring and mitigation would be conducted for the disturbance of undisturbed strata in rock units of moderate and high sensitivity; MM PAL-3 (Authority to Halt Ground Disturbance) emphasizes the authority of paleontological staff to halt construction equipment if necessary; MM PAL-4 (Paleontological Worker Environmental Awareness Program) would require training of all construction personnel; MM PAL-5 (Construction Monitoring for Paleontological Resources) would require spot-checking and full-time monitoring of undisturbed rock strata of moderate and high sensitivity; MM PAL-6 (Paleontological Reporting) outlines how and when the results of paleontological monitoring and mitigation is reported; MM PAL-7 (Curation of Paleontological Materials) specifies how and when any fossils or related documentation should be stored after it is collected; and MM PAL-8 (Pre-construction Paleontological Subsurface Excavation) outlines field work and laboratory analysis necessary prior to construction in a project area underlain completely by rock strata of high paleontological sensitivity. Together these mitigation measures would minimize the potential for direct impacts from solar facility construction to paleontological resources.

Indirect Effects

The geologic units present at the site have a high potential to contain vertebrate fossils and other scientifically valuable paleontological resources. Indirect adverse effects that may occur during the construction of Alternative B include the potential for increased unauthorized collection of fossils and other paleontological resources resulting from increased numbers of personnel in the vicinity. The potential for indirect impacts on paleontological resources is high. MM PAL-4 (Paleontological Worker Environmental Awareness Program) would require training of all construction personnel and would minimize potential indirect effects from construction of Alternative B.

Operation and Maintenance

Direct Effects

No direct effects to paleontological resources associated with operation and maintenance would occur.

Indirect Effects

The geologic units present along the Alternative B corridor have a high potential to contain vertebrate fossils and other scientifically valuable paleontological resources; however, the density of surface deposits of scientifically significant fossils is expected to be low.

Indirect adverse effects that may occur during operation and maintenance of Alternative B include the potential for increased unauthorized collection of fossils and other paleontological resources by visitors. Visitation is expected to occur in the immediate vicinity of the solar facility and is not expected to occur as a result of the presence of the gen-tie line. The potential for indirect effects from operation and maintenance of Alternative B on paleontological resources is therefore low, and no mitigation is necessary.

Decommissioning

Direct Effects

The physical disturbance of the geologic units present at the site during decommissioning of Alternative B could directly impact (i.e., damage or destroy) any fossils that might be present. Once the gen-tie was removed, no additional direct impacts would be likely. The geologic units present at the site have high potential to contain vertebrate fossils and other scientifically valuable paleontological resources. Therefore, the potential for direct impacts on paleontological resources is high.

Indirect Effects

Indirect effects from decommissioning of Alternative B are identical to those during construction of Alternative B (unauthorized fossil collection by personnel). MM PAL-4 (Paleontological Worker Environmental Awareness Program) would require training of all decommissioning personnel, and would minimize the potential for indirect impacts to fossil resources from Alternative B decommissioning.

Mitigation Measures

Mitigation measures MM PAL-1 through MM PAL-8, as described above, are required to reduce adverse project effects related to paleontology.

Residual Impacts and Unavoidable Adverse Effects

No residual impacts or unavoidable adverse effects on paleontological resources have under Alternative B have been identified.

4.7.12 Alternative C – Separate Transmission Towers within Same ROW

Gen-tie line Alternative C follows the same route as Alternative B; however, instead of sharing towers in this alternative each project has separate transmission towers within the same ROW. Gen-tie line Alternative C towers will be located to the west of DSSP towers. Alternative C would impact at least one previously identified fossil locality consisting of a possible pelvis fragment from a large mammal found in the Quaternary alluvium at the southern end of this gen-tie alternative. The potential for specific components of Alternative B to affect this resource cannot be determined until final engineering and micro-siting is completed. This alternative is underlain by the same geologic units as Alternative B, three Class 4-High sensitivity geologic rock units (Pleistocene nonmarine deposits, older Pleistocene nonmarine deposits, Quaternary alluvium). As such, there is a possibility that as-yet-unidentified significant paleontological resources could be located there and, as a result, have the potential to be adversely affected by

Alternative C. As stated in Section 3.1, portions of Alternative C have not been surveyed due to site constraints, and additional resources could exist there.

Construction

Direct Effects

The direct effects resulting from the construction of Alternative C would be the same as those discussed under Alternative B (physical disturbance of significant fossils).

Indirect Effects

The indirect effects resulting from the construction of Alternative C would be the same as those discussed under Alternative B (unauthorized fossil collection by personnel).

Operation and Maintenance

Direct Effects

No direct effects to paleontological resources associated with operation and maintenance would occur for Alternative C.

Indirect Effects

The indirect effects resulting from the operation and maintenance of Alternative C (fossil collection by visitors) would be the same as those discussed under Alternative B.

Decommissioning

Direct Effects

The direct effects resulting from the decommissioning of Alternative C would be the same as those discussed under Alternative B.

Indirect Effects

The indirect effects resulting from the decommissioning of Alternative C would the same as those discussed under Alternative B.

Mitigation Measures

Mitigation measures MM PAL-1 through MM PAL-8, as described above, would reduce adverse project effects related to paleontology.

Residual Impacts and Unavoidable Adverse Effects

No residual impacts or unavoidable adverse effects on paleontological resources under Alternative C would occur.

4.7.13 Alternative D – Cross-Valley Alignment

Gen-tie line Alternative D (formerly evaluated in the Desert Sunlight Solar Farm Project EIS as DSSP Alternative A-2) would exit the southwest corner of the solar facility site, run for a short distance along the east side of Kaiser Road until it intersects with the right-of-way (ROW) of an

existing SCE transmission line, run to the southeast along the existing transmission ROW, then turn south across I-10 to the Red Bluff Substation. The transmission corridor would cover a total length of 10.45 miles with a 160- foot wide corridor with 450-foot radial stringing areas at each turn. This alternative is underlain by Quaternary alluvium which is a Class 4-High sensitivity geologic formation. No paleontological resources have been identified along this route.

Construction

Direct Effects

The direct effects resulting from the construction of Alternative D would be less than those discussed under Alternative B, as no paleontological resources have been identified at Alternative D. As a result physical disturbance of significant fossils, is less likely. MMs PAL-1 through PAL-8, as described above, would minimize potential effects.

Indirect Effects

The indirect effects resulting from the construction of Alternative D would be less than those discussed under Alternative B (unauthorized fossil collection by personnel), as no paleontological resources have been identified at Alternative D. MM PAL-4, as described above, would minimize potential effects.

Operation and Maintenance

Direct Effects

No direct effects to paleontological resources associated with operation and maintenance Alternative D would occur.

Indirect Effects

The indirect effects resulting from the operation and maintenance of Alternative D would be the same as those discussed under Alternative B (fossil collection by visitors). No mitigation is warranted.

Decommissioning

Direct Effects

The direct effects resulting from the decommissioning of Alternative D would less than those discussed under Alternative B (physical disturbance of significant fossils), as no paleontological resources have been identified at Alternative D. MMs PAL-1 through PAL-8 as described above, would minimize potential effects.

Indirect Effects

The indirect effects resulting from the decommissioning of Alternative D would be less than those discussed under Alternative B (unauthorized fossil collection by personnel), as no paleontological resources have been identified at Alternative D. MM PAL-4 (Paleontological Worker Environmental Awareness Program) would require training of all decommissioning personnel,

and would minimize the potential for indirect impacts to fossil resources from Alternative D decommissioning.

Mitigation Measures

The mitigation measures MM PAL-1 through MM PAL-8, as described above, would reduce adverse project effects related to paleontology.

Residual Impacts and Unavoidable Adverse Effects

No residual impacts or unavoidable adverse effects on paleontological resources have under Alternative D have been identified.

4.7.14 Alternative E – New Cross-Valley Alignment

Gen-tie line Alternative E would exit the southeast corner of the solar farm site, run east across BLM and MWD land, cross Highway 177, intersect with the right-of-way (ROW) of an existing SCE transmission line, then turn south across I-10 to the Red Bluff Substation. The transmission corridor covers a total length of 11.47 miles with a 160- foot wide corridor and 450-foot radial stringing areas at each turn. This alternative is underlain by five geologic units (Quaternary-Tertiary playa deposits, Pleistocene nonmarine deposits, Quaternary lake deposits, Quaternary sand, Quaternary alluvium) assigned Class 4-High sensitivity under the BLM PYFC. A sixth Class-4 High sensitivity unit, Quaternary-Tertiary playa deposits, may be present at depth. Field survey identified five fossil localities in Quaternary lake deposits. The species identified here include: tortoise, rodent, rabbit, and bird.

Construction

Direct Effects

The magnitude of direct effects resulting from the construction of Alternative E would be the same as those discussed under Alternative B and D (physical disturbance of significant fossils), but given the overall higher sensitivity of the underlying geologic formation, the severity of impacts would be somewhat greater than Alternative B and greater than Alternative D. MMs PAL-1 through PAL-8, as described above, would minimize potential effects.

Indirect Effects

The magnitude of indirect effects resulting from the construction of Alternative E would be the same as those discussed under Alternative B and D (unauthorized fossil collection by personnel), but given the overall higher sensitivity of the underlying geologic formation, the severity of impacts would be somewhat greater than Alternative B and greater than Alternative D. MM PAL-4, as described above, would minimize potential effects.

Operation and Maintenance

Direct Effects

No direct impacts to paleontological resources associated with operation and maintenance would occur for Alternative E.

Indirect Effects

The indirect effects resulting from the operation and maintenance of Alternative E would be the same as those discussed under Alternative B (fossil collection by visitors). No mitigation is warranted.

Decommissioning

Direct Effects

The magnitude of direct effects resulting from decommissioning of Alternative E would be the same as those discussed under Alternative B and D (physical disturbance of significant fossils), but given the overall higher sensitivity of the underlying geologic formation, the severity of impacts would be somewhat greater than Alternative B and greater than Alternative D. MMs PAL-1 through PAL-8 would minimize potential effects.

Indirect Effects

The magnitude of indirect effects resulting from decommissioning of Alternative E would be the same as those discussed under Alternative B and D (unauthorized fossil collection by personnel), but given the overall higher sensitivity of the underlying geologic formation, the severity of impacts would be somewhat greater than Alternative B and greater than Alternative D. MM PAL-4 would minimize potential effects.

Mitigation Measures

The mitigation measures MM PAL-1 through MM PAL-8, as described above, would reduce adverse project effects related to paleontology.

Residual Impacts and Unavoidable Adverse Effects

No residual impacts or unavoidable adverse effects on paleontological resources under Alternative E would occur.

4.7.15 Cumulative Effects

This section evaluates the potential for DHSP, and other development projects within the vicinity of DHSP, to have cumulative impacts to paleontological resources. Paleontological effects of multiple ground-disturbing projects have the potential to be cumulatively additive. Individually minor but collectively important actions, usually in the form of ground disturbance, may have a substantial adverse cumulative effect on paleontological resources.

Geographic Scope

The geographic extent for cumulative impacts analysis is limited to the immediate region of the physical disturbance associated with the DHSP and other projects within the I-10 corridor.

Table 4.7-1. Cumulative Projects within the Geographic Scope of Cumulative Analysis

Resource Area / BLM Program Area	Geographic Area of Consideration	Elements to Consider	BLM Authorized and Other Known County Projects/Actions/Activities
Paleontology	Within the I-10 corridor between Desert Center and Blythe	Ground disturbance	All projects listed in Table 4.1-1 and 4.1-2

Cumulative Effects Analysis

Paleontologic resources have been documented in the general area of the DHSP, and significant fossils are likely to continue to be unearthed during construction of Alternatives 4 through 7 and C through E plus the other major ongoing and foreseeable solar and energy infrastructure projects along the Interstate-10 corridor (Section 3.16). For the DHSP, MMs PAL-1 through MM PAL-8 and similar monitoring, curation, and reporting measures being required and implemented on other major infrastructure projects would minimize cumulative impacts to paleontological resources. It is anticipated that other foreseeable projects will follow similar procedures. Overall, if significant fossils are uncovered and appropriately documented and curated during construction of these major infrastructure projects, there could be an overall net gain to the science of paleontology by allowing fossils that would not otherwise have been found to be recovered, identified, studied, and preserved.

The No Action and No Project Alternatives (Alternatives 1, 2, 3, and A) would not contribute to any cumulative effects. Under the cumulative scenario for Alternative B, which considers that the DSSF gen-tie is constructed and the DHSP gen-tie is located on shared poles with no additional ground disturbance, the DHSP gen-tie would result in no net cumulative impacts on paleontological resources in combination with the reasonably foreseeable DSSP gen-tie line. Alternative B would not contribute to cumulative effects.

4.7.16 CEQA Considerations

This section is included in this EIS and CDCA Plan Amendment for future use by CEQA Lead and Responsible agencies and is not required under NEPA.

The principal measure of effect on paleontological resources is the presence or potential presence of these resources in areas where ground disturbance would occur.

CEQA Significance Criteria

The significance criteria listed below are from the Environmental Checklist Form in Appendix G of the CEQA Guidelines. They are used to determine whether the proposed project or alternatives would result in significant impacts under CEQA related to paleontological resources. The proposed project or alternatives would result in a significant impact related to paleontological resources if they would:

PAL-1 Damage or destroy fossils or other unique paleontological resources;

PAL-2 Directly or indirectly destroy a unique geologic feature associated with paleontological resources; or

PAL-3 Cause the loss of valuable scientific information by disturbing the geology in which fossils are found.

Significant impacts would result from actions where these impacts could not be mitigated by collection prior to and during disturbance or by avoidance.

CEQA Significance Determination

Alternative 1. Under Alternative 1, the proposed DHSP would not be approved by the BLM, and BLM would not amend the CDCA Plan. As a result, the proposed solar energy project would not be constructed and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended. It is expected that the site would remain in its existing condition, with no new structures or facilities constructed or operated and no ground disturbance. No significant impacts to paleontological resources would result from Alternative 1. Alternative 1 would not contribute to any significant cumulative impact, as defined in CEQA.

Alternative 2. Under Alternative 2, the proposed DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site available for future solar energy development. As a result, the proposed would not be constructed and BLM would manage the site consistent with the amended land use designation in the CDCA Land Use Plan. Any future project would be reviewed under a separate NEPA analysis. No significant impacts to paleontological resources would result from the DHSP. Alternative 2 would not contribute to any significant cumulative impact, as defined in CEQA.

Alternative 3. Under Alternative 3, the proposed DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site unavailable for future solar energy development. As a result, the proposed would not be constructed and BLM would manage the site consistent with the amended land use designation in the CDCA Land Use Plan. Any future project would be reviewed under a separate NEPA analysis. No significant impacts to paleontological resources would result from the DHSP. Alternative 2 would not contribute to any significant cumulative impact, as defined in CEQA.

Alternative 4. Under Alternative 4, the Applicant's proposed solar facility, the direct and indirect impacts of project construction, operation, and decommissioning to paleontological resources as described in Section 4.7.5, would be significant under criteria PAL-1 (destruction of unique resources), PAL-2 (destruction of a unique feature), and PAL-3 (loss of scientific information), above.

With implementation of Mitigation Measures MM PAL-1 through MM PAL-8, as described above, these impacts to paleontological resources would be mitigated to less than significant levels under CEQA by: retaining a paleontologist, preparing a paleontological resource management plan, pre-construction monitoring of geotechnical testing, development of a worker environmental awareness program, construction monitoring, recovery and testing of resources, submission of monthly progress reports, sample analysis, preparation of a final report, and the curation of collections and documents.

Under CEQA, there would be no unavoidable significant impacts to these resources.

Alternative 5. Under Alternative 5 the direct and indirect impacts of project construction, operation, and decommissioning, to paleontological resources as described in Section 4.7.6, would be significant under criteria PAL-1 (destruction of unique resources), PAL-2 (destruction of a unique feature), and PAL-3 (loss of scientific information), above.

With implementation of Mitigation Measures MM PAL-1 through MM PAL-8, as described above, these impacts to paleontological resources would be mitigated to less than significant levels under CEQA by: retaining a paleontologist, preparing a paleontological resource management plan, pre-construction monitoring of geotechnical testing, development of a worker environmental awareness program, construction monitoring, recovery and testing of resources, submission of monthly progress reports, sample analysis, preparation of a final report, and the curation of collections and documents.

Under CEQA, there would be no unavoidable significant impacts to these resources.

Alternative 6. Under Alternative 6 the direct and indirect impacts of project construction, operation, and decommissioning, to paleontological resources as described in Section 4.7.7, would be significant under criteria PAL-1 (destruction of unique resources), PAL-2 (destruction of a unique feature), and PAL-3 (loss of scientific information), above.

With implementation of Mitigation Measures MM PAL-1 through MM PAL-8, as described above, these impacts to paleontological resources would be mitigated to less than significant levels under CEQA by: retaining a paleontologist, preparing a paleontological resource management plan, pre-construction monitoring of geotechnical testing, development of a worker environmental awareness program, construction monitoring, recovery and testing of resources, submission of monthly progress reports, sample analysis, preparation of a final report, and the curation of collections and documents.

Under CEQA, there would be no unavoidable significant impacts to these resources.

Alternative 7. Under Alternative 7 the direct and indirect impacts of project construction, operation, and decommissioning, to paleontological resources as described in Section 4.7.7, would be significant under criteria PAL-1 (destruction of unique resources), PAL-2 (destruction of a unique feature), and PAL-3 (loss of scientific information), above.

With implementation of Mitigation Measures MM PAL-1 through MM PAL-8, as described above, these impacts to paleontological resources would be mitigated to less than significant levels under CEQA by: retaining a paleontologist, preparing a paleontological resource management plan, pre-construction monitoring of geotechnical testing, development of a worker environmental awareness program, construction monitoring, recovery and testing of resources, submission of monthly progress reports, sample analysis, preparation of a final report, and the curation of collections and documents.

Under CEQA, there would be no unavoidable significant impacts to these resources.

Alternative A. Under Alternative A, no gen-tie line would be approved by the BLM, and BLM would not amend the CDCA Plan. As a result, the proposed gen-tie line would not be constructed and BLM would continue to manage the ROW consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended (including the Desert Sunlight amendment). It is expected that the Desert Sunlight gen-tie line would be built within the ROW,

and that impacts to vegetation resources would be as described in the Desert Sunlight EIS (BLM 2011). No significant impacts to paleontological resources would result from Alternative A. Alternative A would not contribute to any significant cumulative impact.

Alternative B. Under Alternative B, the direct and indirect impacts of gen-tie line construction, operation, and decommissioning, to paleontological resources, as described in Section 4.7.9, would be significant under PAL-1 (destruction of unique resources), PAL-2 (destruction of a unique feature), and PAL-3 (loss of scientific information), above.

With implementation of Mitigation Measures MM PAL-1 through MM PAL-8, as described above, these impacts to paleontological resources would be mitigated to less than significant levels under CEQA by: retaining a paleontologist, preparing a paleontological resource management plan, pre-construction monitoring of geotechnical testing, development of a worker environmental awareness program, construction monitoring, recovery and testing of resources, submission of monthly progress reports, sample analysis, preparation of a final report, and the curation of collections and documents.

Under CEQA, there would be no unavoidable significant impacts to these resources.

Alternative C. Under Alternative C, the direct and indirect impacts of gen-tie line construction, operation, and decommissioning, to paleontological resources, as described in Section 4.7.10, would be significant under PAL-1 (destruction of unique resources), PAL-2 (destruction of a unique feature), and PAL-3 (loss of scientific information), above.

With implementation of Mitigation Measures MM PAL-1 through MM PAL-8, as described above, these impacts to paleontological resources would be mitigated to less than significant levels under CEQA by: retaining a paleontologist, preparing a paleontological resource management plan, pre-construction monitoring of geotechnical testing, development of a worker environmental awareness program, construction monitoring, recovery and testing of resources, submission of monthly progress reports, sample analysis, preparation of a final report, and the curation of collections and documents.

Under CEQA, there would be no unavoidable significant impacts to these resources.

Alternative D. Under Alternative D, the direct and indirect impacts of gen-tie line construction, operation, and decommissioning, to paleontological resources, as described in Section 4.7.11, would be significant under PAL-1 (destruction of unique resources), PAL-2 (destruction of a unique feature), and PAL-3 (loss of scientific information), above.

With implementation of Mitigation Measures MM PAL-1 through MM PAL-8, as described above, these impacts to paleontological resources would be mitigated to less than significant levels under CEQA by: retaining a paleontologist, preparing a paleontological resource management plan, pre-construction monitoring of geotechnical testing, development of a worker environmental awareness program, construction monitoring, recovery and testing of resources, submission of monthly progress reports, sample analysis, preparation of a final report, and the curation of collections and documents.

Under CEQA, there would be no unavoidable significant impacts to these resources.

Alternative E. Under Alternative E, the direct and indirect impacts of gen-tie line construction, operation, and decommissioning, to paleontological resources, as described in Section 4.7.12,

would be significant under PAL-1 (destruction of unique resources), PAL-2 (destruction of a unique feature), and PAL-3 (loss of scientific information), above.

With implementation of Mitigation Measures MM PAL-1 through MM PAL-8, as described above, these impacts to paleontological resources would be mitigated to less than significant levels under CEQA by: retaining a paleontologist, preparing a paleontological resource management plan, pre-construction monitoring of geotechnical testing, development of a worker environmental awareness program, construction monitoring, recovery and testing of resources, submission of monthly progress reports, sample analysis, preparation of a final report, and the curation of collections and documents.

Under CEQA, there would be no unavoidable significant impacts to these resources.

4.8 FIRE AND FUELS MANAGEMENT

4.8.1 Methodology for Analysis

Baseline conditions for the effects analysis presented in this section were established in Section 3.8. To evaluate effects of the Desert Harvest Solar Project (DHSP) related to fire and fuels management within the project study area, the California Department of Forestry and Fire Protection (CAL FIRE) maps and datasets on statewide Fire Hazard Severity Zones (FHSZ), aerial photographs, and site reconnaissance documenting vegetation conditions were all used to determine wildfire risk in the vicinity of the solar facility site. Published literature on fire behavior and indirect effects on natural resources was reviewed to assess potential indirect effects. The County of Riverside General Plan was reviewed for requirements for emergency response plans, hazard management plans, and wildfire potential.

4.8.2 Applicant Measures

The following Applicant Measures (AMs) have been incorporated as design features of the proposed project (and all action alternatives) and shall be implemented to reduce adverse impacts associated with the project. In some cases, mitigation measures further clarify or expand on AM reporting requirements, timing of implementation, or other details where appropriate. Where there is a conflict between provisions of the mitigation measures imposed and the following AMs, the mitigation measures take precedence.

AM HAZ-7 **Fire protection measures shall be implemented**. Project facilities will be designed, constructed, and operated in accordance with applicable fire protection and other environmental, health and safety requirements. In compliance with County of Riverside requirements, a project-specific fire prevention plan for both construction and operation of the Solar Farm and Gen-Tie Line will be completed prior to initiation of construction. The fire protection plan will be approved by the BLM and provided to Riverside County for review and comment.

AM HAZ-8 **Fire Prevention Plan.** A project-specific fire prevention plan will be in place during construction, operation and decommissioning of the project. This plan will comply with applicable County of Riverside regulations and would be coordinated with the BLM Fire Management Officer and the local Fire Department in the Chuckwalla Valley at Tamarisk Park.

AM HAZ-9 **Emergency Response Plan.** An emergency response plan and site security plan will be completed for the project facilities by qualified professionals. These plans will be developed in accordance with the BLM requirements.

4.8.3 Alternative 1 – No Action (No Plan Amendment)

Under Alternative 1, the proposed DHSP would not be approved by the BLM, and BLM would not amend the CDCA Plan. No solar energy project would be constructed on the project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no ground disturbance. As a result, effects caused by project-related wildfires to people and the environment would not occur.

4.8.4 Alternative 2 – No Project Alternative (with Plan Amendment to Find the Site Suitable for Solar Energy Development)

Under Alternative 2, the proposed DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site available for future solar energy development. As a result, the DHSP would not be constructed on the project site and the BLM would manage the site consistent with the amended land use designation in the CDCA Land Use Plan. No effects from the DHSP would occur.

4.8.5 Alternative 3 – No Project Alternative (with Plan Amendment to Find the Site Unsuitable for Solar Energy Development)

Under Alternative 3, the DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site unavailable for future solar energy development. As a result, the DHSP would not be constructed on the project site and BLM would manage the site consistent with the amended land use designation in the CDCA Land Use Plan. No impacts from the DHSP would occur.

4.8.6 Alternative 4 – Proposed Solar Project

Construction

Direct Effects

Alternative 4 would be located in an area of Riverside County that has been determined to have a low to moderate susceptibility to wildfire (Riverside County 2003). Construction of Alternative 4 would increase the potential for a wildfire and could impact the public and environment by exposure to wildfire due to construction activities and ground disturbance. The risk of wildfire would be related to combustion of native plants caused by smoking, refueling, and operating vehicles and other equipment or hazardous materials off paved roadways. A project-related fire could escape initial containment and pose a hazard to life and property for project personnel and nearby landowners. To reduce the risk of wildfire and ensure adequate response to potential wildfires, Mitigation Measures FIRE-1 (a project-specific Fire Prevention Plan), MM PHS-5 (a project-specific Emergency Response and Inventory Plan), and MM PHS-7 (a project-specific fire services agreement with Riverside County and BLM) would be implemented. The full text of MM PHS-5 and MM PHS-7 is in Section 4.13 (Public Health and Safety).

Indirect Effects

Construction of Alternative 4 could introduce non-native plants to the solar facility landscape. Because they dry out earlier in the season and interconnect otherwise patchy native desert plants, non-native plant invasions can result in a landscape's increased susceptibility to wildfire and increased fire frequency beyond what is normal under natural conditions. Construction of Alternative 4 could, therefore, indirectly result in increased fire frequency in the desert environment,

putting nearby residents, structures, personnel, and native habitats at risk of harm from wildfire. To reduce the risk of invasion of non-native plants, and to control any introductions of non-native species on an ongoing basis, Mitigation Measure VEG-9 (an Integrated Weed Management Plan) would be implemented. Alternative 4 could also indirectly increase wildfire spread because restricting access to the solar facility site could impede fire-fighting efforts. To reduce risks related to restricted site access, MM FIRE-1 (a project-specific Fire Prevention Plan), which includes 24-hour site access for fire agencies and a wildfire traffic management plan, would be implemented. However, restricted site access could indirectly decrease the risk of fire ignitions from arson, campfires, and smoking.

Operation and Maintenance

Direct Effects

During operation of Alternative 4, there would be an increased potential for a wildfire that and could impact the public and environment by exposure to wildfire due to ongoing operation and maintenance activities. The risk of wildfire would be related to the combustion of native plants caused by smoking and refueling. No vehicles would be used off road. To reduce the risk of wildfire and ensure adequate response to potential wildfires, Mitigation Measures FIRE-1 (a project-specific Fire Prevention Plan), MM PHS-5 (a project-specific Emergency Response and Inventory Plan), and MM PHS-7 (a project-specific fire services agreement with Riverside County and BLM) would be implemented. The full text of MM PHS-5 and MM PHS-7 is in Section 4.13 (Public Health and Safety).

Indirect Effects

Indirect effects of operating and maintaining Alternative 4 on wildfire would be similar to those described for construction. The effects related to non-native species introduction would be reduced given the smaller workforce and decreased activity level (compared to construction) required for operation and maintenance.

Decommissioning

Direct Effects

During the decommissioning activities of Alternative 4, there would be an increased potential for a wildfire that could impact the public and environment. The risk of wildfire would be related to the combustion of native plants caused by smoking, refueling, and operating vehicles and other equipment off road. To reduce the risk of wildfire and ensure adequate response to potential wildfires, Mitigation Measures FIRE-1 (a project-specific Fire Prevention Plan),MM PHS-5 (a project-specific Emergency Response and Inventory Plan), and MM PHS-7 (a project-specific fire services agreement with Riverside County and BLM) would be implemented. The full text of MM PHS-5 and MM PHS-7 is in Section 4.13 (Public Health and Safety).

Indirect Effects

Indirect effects of operating and maintaining Alternative 4 would be the same as those described for construction.

Mitigation Measures

The following mitigation measure would reduce indirect effects related to wildfire risk.

MM FIRE 1 A project-specific Fire Prevention Plan shall be developed and implemented. This Plan shall comply with applicable County of Riverside regulations and would be coordinated with the BLM Fire Management Officer and the local Fire Department in the Chuckwalla Valley at Tamarisk Park. The Plan shall be developed for construction, operations/maintenance, and decommissioning activities.

The following steps shall be taken to identify and control fires and similar emergencies.

1. **Wildfire traffic control and site access**. The project owner shall develop a wildfire traffic control plan. The plan shall provide mechanisms for keeping roads passable for emergency service providers in a wildfire or other emergency situation. The traffic control plan shall identify strategic locations for adequate construction and maintenance vehicle parking, as necessary, in consultation with BLM. Alternative routes for large equipment and vehicle evacuation shall be identified to the extent possible. The plan shall provide specifications, including GIS data, for a network of access roads to be constructed for adequate fire control and emergency vehicle access to the site. Local fire agencies shall have 24-hour access to the solar farm site. Fire access roads and gates shall be a minimum of 12 feet to allow fire bulldozer access. Firefighting roads shall be maintained to permit access to 2-wheel drive fire equipment. Approved roads shall be named or designated with road signs that shall be maintained in good condition. Project fences shall not limit access to fire roads, fire hydrants, or fire protection systems. The project owner shall provide and maintain a Knox Box or similar system to allow fire and law enforcement, including U.S. Border Patrol, access. Below surface pipelines, electrical and communications lines shall be signed at an interval appropriate to alert firefighting bulldozer and off road fire engine operations to advise firefighters of depth and location.

2. **Minimize fire risk by removing vegetation**. Electrical equipment that is part of the project would only be energized after the necessary inspections and approval to ensure minimal risk of any electrical fire during construction. Measures to minimize fire risk shall include removal of dry vegetation and/or other combustible materials within 30 feet of any hazardous material storage, compressed gas storage, or equipment/vehicle that has the potential to spark a fire. Cleared dead and decaying vegetation shall be removed.

3. **Use of non-flammable coolant for transformers**. Transformers located on site shall be equipped with non-toxic mineral-oil based coolant that is non-flammable, biodegradable and contains no polychlorinated biphenyls or other toxic compounds.

4. **Halt construction during "severe fire weather."** Construction activities shall be halted during "severe fire weather" as defined by the local CAL FIRE office and BLM Fire Management. Work may be resumed during severe fire

weather only with approval of the local CAL FIRE office and BLM Fire Management.

5. **Blasting plan must be approved before any project-related blasting**. No blasting shall occur without submission and approval of a blasting plan. Plan shall be approved by BLM, CAL FIRE, and local fire agency before the start of ground disturbance.

6. **Prevent conflicts with aerial fire-fighting**. All new overhead structures introduced by gen-tie lines shall be mapped and maps and GIS data shall be provided to fire agencies to prevent conflicts with aerial fire-fighting. Construction contractor and project operator shall also coordinate with fire agencies to reduce potential conflicts.

7. **Crew members shall monitor for fire risks and immediately report fires and fire risks**. All construction/maintenance/decommissioning crews and inspectors shall be provided with radio and cellular telephone access that is operational throughout the entire approved solar farm site and gen-tie line route to allow for immediate reporting of fires. Communications equipment shall be tested and confirmed as operational each day prior to initiating construction or maintenance activities. All fires shall be reported to fire agencies, both CAL FIRE and BLM, immediately. Each crew member shall carry at all times a laminated card listed pertinent telephone numbers for reporting fires and defining immediate steps to take if a fire starts, including appropriate fire suppression measures. Project staff shall monitor fire risks during construction and operation to ensure that prompt measures are taken to mitigate identified risks. The project owner's staff vehicles shall be equipped with fire extinguishers.

In addition to the elements listed above, the Plan shall include the following, at a minimum:

8. The project owner shall provide a dedicated 10,000-gallon water tank, labeled for fire suppression, and maintained for firefighter use. The plumbing connection must be such that the tank can be opened or closed, the plumbing must be permanent, of metal material, and no less than 4 inches. The firefighting connection must be of metal construction and 4-inch National Hose Thread with a separate coupling, that shall be removable, shall be of metal construction from 4-inch National Hose thread to 2 1/2-inch National Hose Thread. A protective cap must be in place to protect the hose threads.

9. No combustible materials, patio furniture, wood picnic tables, sun shades, patio roof shall be stored, placed or constructed around buildings. Such items must be fire resistant.

10. Campfires, barbeques, and stoves must be placed in cleared areas.

11. A notification list shall be provided in the Plan with current contact information for all relevant parties. The notification list shall be updated as changes occur, and available on scene at the Knox Box location.

12. Addresses shall be visible from road, signed with lettering at least 6 inches in height, reflective, and of color contrast to its background.
13. The project owner shall provide a training program for emergency fire responders so that they can safely fight fires without damaging equipment to the extent possible. To this end, the project owner shall provide a single training prop (small panel system) to the Riverside County Fire Department to enhance the training experience.

MM PHS-5 **A project-specific Emergency Response and Inventory Plan shall be prepared** [full text of measure in Section 4.13]

MM PHS-7 **Develop and implement fire services agreement with Riverside County Fire Department and BLM.** [full text of measure in Section 4.13]

MM VEG-9 **Prepare and implement an Integrated Weed Management Plan.** [full text of measure in Section 4.3]

Residual Impacts and Unavoidable Adverse Effects

Implementation of Alternative 4 would not result in unavoidable adverse effects related to fire and fuels management. Effects related to wildfire risk would be mitigated as specified earlier in this section to prevent unavoidable effects.

4.8.7 Alternative 5 – Solar Project Excluding WHMA

Construction

Direct Effects

Because Alternative 5 would require a similar construction workforce and extent of construction operations as Alternative 4, the direct effects of Alternative 5 would be nearly identical to those described for Alternative 4.

Indirect Effects

The indirect effects during construction of Alternative 5 on wildfire would be nearly identical to those described in Alternative 4.

Operation and Maintenance

Direct Effects

Because Alternative 5 would require similar operations and management as Alternative 4, the direct effects of operating and maintaining Alternative 5 would be similar to those described for Alternative 4.

Indirect Effects

The indirect effects of operating and maintaining Alternative 5 would be similar to those described in Alternative 4.

Decommissioning

Direct Effects

Because Alternative 5 would require nearly identical decommissioning operations as Alternative 4, the direct effects of decommissioning Alternative 5 would be similar to those described for Alternative 4.

Indirect Effects

The indirect effects of operating and maintaining Alternative 5 would be similar to those described in Alternative 4.

Mitigation Measures

The same mitigation measures would apply to Alternative 5 as would apply to Alternative 4.

Residual Impacts and Unavoidable Adverse Effects

Implementation of Alternative 5 would not result in unavoidable adverse effects related to fire and fuels management. Effects related to wildfire risk would be mitigated as specified earlier in this section to prevent unavoidable effects.

4.8.8 Alternative 6 – Reduced Footprint Solar Project

Construction

Direct Effects

Because Alternative 6 would require a similar construction workforce and extent of construction operations as Alternative 4, the direct effects of Alternative 6 would be nearly identical to those described for Alternative 4.

Indirect Effects

The indirect effects during construction of Alternative 6 on wildfire would be nearly identical to those described in Alternative 4.

Operation and Maintenance

Direct Effects

Because Alternative 6 would require similar operations and management as Alternative 4, the direct effects of operating and maintaining Alternative 6 would be similar to those described for Alternative 4.

Indirect Effects

The indirect effects of operating and maintaining Alternative 6 would be nearly identical to those described in Alternative 4.

Decommissioning

Direct Effects

Because Alternative 6 would require nearly identical decommissioning operations as Alternative 4, the direct effects of decommissioning Alternative 6 would be nearly identical to those described for Alternative 4.

Indirect Effects

The indirect effects of operating and maintaining Alternative 6 would be similar to those described in Alternative 4.

Mitigation Measures

The same mitigation measures would apply to Alternative 6 as would apply to Alternative 4.

Residual Impacts and Unavoidable Adverse Effects

Implementation of Alternative 6 would not result in unavoidable adverse effects related to fire and fuels management. Effects related to wildfire risk would be mitigated as specified earlier in this section to prevent unavoidable effects.

4.8.9 Alternative 7 – High-Profile Reduced Footprint Solar Project

Construction

Direct Effects

Because Alternative 7 would require a similar construction workforce and extent of construction operations as Alternative 4, the direct effects of Alternative 7 would be nearly identical to those described for Alternative 4.

Indirect Effects

The indirect effects during construction of Alternative 7 on wildfire would be nearly identical to those described in Alternative 4.

Operation and Maintenance

Direct Effects

Because Alternative 7 would require similar operations and management as Alternative 4, the direct effects of operating and maintaining Alternative 7 would be similar to those described for Alternative 4.

Indirect Effects

The indirect effects of operating and maintaining Alternative 7 would be nearly identical to those described in Alternative 4.

Decommissioning

Direct Effects

Because Alternative 7 would require nearly identical decommissioning operations as Alternative 4, the direct effects of decommissioning Alternative 7 would be nearly identical to those described for Alternative 4.

Indirect Effects

The indirect effects of operating and maintaining Alternative 7 would be similar to those described in Alternative 4.

Mitigation Measures

The same mitigation measures would apply to Alternative 7 as would apply to Alternative 4.

Residual Impacts and Unavoidable Adverse Effects

Implementation of Alternative 7 would not result in unavoidable adverse effects related to fire and fuels management. Effects related to wildfire risk would be mitigated as specified earlier in this section to prevent unavoidable effects.

4.8.10 Alternative A – No Gen-Tie

Under Alternative A, no gen-tie line would be constructed and no plan amendment would be issued. If this No Action Alternative were selected, the construction and effects of the gen-tie line would not occur, and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because there would be no amendment to the CDCA Plan and no gen-tie line approved for the site under this alternative, it is expected that proposed tower locations and pull sites would continue to remain in their existing conditions, with no new structures constructed or operated on and no ground disturbance. As a result, effects caused by project-related wildfires to people and the environment would not occur.

4.8.11 Alternative B – Proposed Gen-Tie (Shared Towers)

Construction

Direct Effects

Like Alternatives 4 through 7, Alternative B would be located in an area of Riverside County that has been determined to have a low to moderate susceptibility to wildfire. Direct effects of construction would be similar to those described in Alternative 4. These effects would be reduced because of the smaller workforce, reduced equipment requirements, and smaller area of disturbance. These effects would be reduced by MM PHS-5 (a project-specific Emergency Response and Inventory Plan).

Indirect Effects

Construction of Alternative B could introduce non-native plants to the gen-tie line landscape. The indirect effects of construction of Alternative B would be similar to those described in Alternative 4 but reduced because of the smaller workforce, fewer equipment requirements, and smaller area of disturbance. Because Alternative B would introduce new overhead structures, this alternative could cause potential conflicts with aerial fire-fighting. MM VEG-9 (Integrated Weed Management Plan) would be implemented to reduce effects related to non-native plants.

Operation and Maintenance

Direct Effects

During operation of Alternative B, there would be an increased potential for a wildfire that and could impact the public and environment by exposure to wildfire due to ongoing operation and maintenance activities. The risk of wildfire would be related to the combustion of native plants caused by vehicles, equipment, or hazardous materials. No vehicles would be used off road during operations. These effects would be reduced compared to those described in Alternative 4 given the smaller workforce and area required to operate and maintain Alternative B. Mitigation MM PHS-5 (a project-specific Emergency Response and Inventory Plan) would be implemented to reduce effects.

Indirect Effects

Indirect effects of operating and maintaining Alternative B on wildfire would be similar to those described for construction. These effects would be largely reduced given the smaller workforce and equipment requirements of operation and maintenance.

Decommissioning

Direct Effects

Because of the similarity in workforce and equipment requirements, direct effects of decommissioning Alternative B would be nearly identical to those described for construction.

Indirect Effects

Indirect effects of decommissioning Alternative B would be nearly identical to those described for construction.

Mitigation Measures

The same mitigation measures would apply to Alternative B as apply to Alternative 4.

Residual Impacts and Unavoidable Adverse Effects

Implementation of Alternative B would not result in unavoidable adverse effects related to fire and fuels management. Effects related to wildfire risk would be mitigated as specified earlier in this section to prevent unavoidable effects.

4.8.12 Alternative C – Separate Transmission Towers within Same ROW

Construction

Direct Effects

Because Alternative C would require a similar construction workforce and extent of construction operations as Alternative B, the direct effects of Alternative C would be nearly identical to those described for Alternative B.

Indirect Effects

The indirect effects during construction of Alternative C on wildfire would be nearly identical to those described in Alternative B.

Operation and Maintenance

Direct Effects

Because Alternative C would require identical operations and management as Alternative B, the direct effects of operating and maintaining Alternative C would be identical to those described for Alternative B.

Indirect Effects

The indirect effects of operating and maintaining Alternative C would be identical to those described in Alternative B.

Decommissioning

Direct Effects

Because Alternative C would require nearly identical decommissioning operations as Alternative B, the direct effects of decommissioning Alternative C would be identical to those described for Alternative B.

Indirect Effects

The indirect effects of operating and maintaining Alternative C would be identical to those described in Alternative B.

Mitigation Measures

The same mitigation measures would apply to Alternative C as apply to Alternative 4.

Residual Impacts and Unavoidable Adverse Effects

Implementation of Alternative C would not result in unavoidable adverse effects related to fire and fuels management. Effects related to wildfire risk would be mitigated as specified earlier in this section to prevent unavoidable effects.

4.8.13 Alternative D – Cross-Valley Alignment

Construction

Direct Effects

Because Alternative D would require a similar construction workforce and extent of construction operations as Alternative B, the direct effects of Alternative D would be nearly identical to those described for Alternative B.

Indirect Effects

The indirect effects during construction of Alternative D on wildfire would be nearly identical to those described in Alternative B. However, this alternative would not have the same indirect effects related to introducing new overhead structures.

Operation and Maintenance

Direct Effects

Because Alternative D would require identical operations and management as Alternative B, the direct effects of operating and maintaining Alternative D would be identical to those described for Alternative B.

Indirect Effects

The indirect effects of operating and maintaining Alternative D would be identical to those described in Alternative B.

Decommissioning

Direct Effects

Because Alternative D would require nearly identical decommissioning operations as Alternative B, the direct effects of decommissioning Alternative D would be identical to those described for Alternative B.

Indirect Effects

The indirect effects of operating and maintaining Alternative D would be identical to those described in Alternative B.

Mitigation Measures

The same mitigation measures would apply to Alternative D as apply to Alternative 4.

Residual Impacts and Unavoidable Adverse Effects

Implementation of Alternative D would not result in unavoidable adverse effects related to fire and fuels management. Effects related to wildfire risk would be mitigated as specified earlier in this section to prevent unavoidable effects.

4.8.14 Alternative E – New Cross-Valley Alignment

Construction

Direct Effects

Because Alternative E would require a similar construction workforce and extent of construction operations as Alternative B, the direct effects of Alternative E would be nearly identical to those described for Alternative B.

Indirect Effects

The indirect effects during construction of Alternative E on wildfire would be nearly identical to those described in Alternative B.

Operation and Maintenance

Direct Effects

Because Alternative E would require identical operations and management as Alternative B, the direct effects of operating and maintaining Alternative E would be identical to those described for Alternative B.

Indirect Effects

The indirect effects of operating and maintaining Alternative E would be identical to those described in Alternative B.

Decommissioning

Direct Effects

Because Alternative E would require nearly identical decommissioning operations as Alternative B, the direct effects of decommissioning Alternative E would be identical to those described for Alternative B.

Indirect Effects

The indirect effects of operating and maintaining Alternative E would be identical to those described in Alternative B.

Mitigation Measures

The same mitigation measures would apply to Alternative E as apply to Alternative 4.

Residual Impacts and Unavoidable Adverse Effects

Implementation of Alternative E would not result in unavoidable adverse effects related to fire and fuels management. Effects related to wildfire risk would be mitigated as specified earlier in this section to prevent unavoidable effects.

4.8.15 Cumulative Effects

Geographic Scope

The geographic area considered for cumulative effects on fire and fuels management is within the I-10 corridor from Indio to Blythe, California for emergency response purposes and within a one-mile radius of the proposed project and alternatives. A cumulative fire effect would occur if multiple projects were to increase the frequency of fires in the same location or if the fires could potentially spread to the same areas. The existing and reasonably foreseeable projects listed in Tables 4.1-1 and 4.1-2 (see Section 4.1.4, Introduction, Cumulative Scenario Approach) could combine to create cumulative effects to emergency response. The projects listed below in Table 4.8-1 could combine with the DHSP to create cumulative effects to fire risk.

Table 4.8-1. Cumulative Projects within the Geographic Scope of Cumulative Analysis

Resource Area / BLM Program Area	Geographic Area of Consideration	Elements to Consider	BLM Authorized and Other Known County Projects/Actions/Activities
Fire and Fuels Management	Within the I-10 corridor from Indio to Blythe, California for emergency response and within 1 mile of the proposed project for fire risk	Increase in fire ignitions, impacts to worker safety, emergency response, and fire protection	All projects listed in Table 4.1-1 and 4.1-2 for emergency response. The following projects for fire risk: • Desert Sunlight Solar Farm • Chuckwalla Valley Raceway • DPV1 Transmission Line • Blythe Energy Project Transmission Line • I-10 • Silverado Power Solar Project • SCE Red Bluff Substation • Desert Center 50 (for Alternative E) • Sol Orchard • DPV No.2 Transmission Line

Most of these projects have either undergone independent environmental review pursuant to NEPA and/or CEQA or will do so prior to approval. Even if environmental review has not been completed for the cumulative projects described, their effects were considered in the cumulative effects analyses in this EIS.

The temporal scope of this cumulative analysis is considered the duration of construction, operation, and decommissioning of the proposed project or an alternative. This is because the construction, operation and maintenance, and decommissioning of the DHSP would could result in wildfire ignitions and impact emergency response time throughout the life of the project.

Cumulative Effects Analysis

The Desert Sunlight Solar Farm (DSSF) project and Interstate 10 are located within the cumulative study area for fire and fuels management, as are several other proposed renewable energy projects. The proposed project is scheduled to be under construction concurrently with the DSSF, and could overlap with other proposed projects pending their approval. Interstate 10 is an existing project. Construction and operation of the DSSF could result in wildfire ignitions due to the use of heavy equipment, smoking, or welding. Transmission lines may also cause wildfire ignitions if maintenance is not properly conducted, if a low-flying plane or helicopter were to crash into the line, or sometimes as a result of wildlife collisions. Ignitions from Interstate 10 could originate from drivers throwing cigarette butts out car windows.

Fire ignitions from Alternative 4 could combine with ignitions from the DSSF and from drivers on Interstate 10 to increase the frequency of fires above the baseline fire frequency. The combination of these projects being constructed concurrently could substantially increase the frequency of fire in the area above natural conditions. Worker safety, emergency response, and fire protection could all be affected if simultaneous emergency response to multiple locations is required. Although the chances that two or more alternative energy facilities would require emergency response simultaneously may be low, a response to one distant site could impede or preclude a simultaneous response to another facility, residential or commercial location, or other location in demand.

In light of the similarities in their components and construction requirements, the fire and fuels management cumulative impacts for Alternatives 5, 6, and 7 would be essentially the same as described for Alternative 4 and would not be cumulatively considerable. Alternatives C through E would be largely the same as one another, and an overall cumulative increase in fire frequency could be substantial in the Chuckwalla Valley as a result of large-scale development of an open-space desert area. With implementation of MM FIRE-1 (a project-specific Fire Prevention Plan), which would ensure personnel are trained in emergency firefighting techniques, and that fire-protection equipment is available at the DHSP project site, the incremental increase in wildfire frequency and demands on emergency services of Alternatives C through E would be minimal. With mitigation measures required for Alternatives C through E, the contribution of these alternatives to this cumulative effect would be minimized, and similarly, the extensive fire-safe mitigation measures required for the DSSF project and any approved solar project would minimize fire ignitions from these sources.

There would be no cumulative fire and fuels management impacts under the No Action Alternatives 1, 2, 3, and A because there would be no ROW grant for development of the project and associated facilities. There would also be no cumulative fire and fuel management impacts under Alternative B, because the DHSP gen-tie line would be located on shared poles of the reasonably foreseeable DSSF. The incremental effects of the DHSP gen-tie under alternative B would be negligible when combined with those of the DSSP gen-tie.

4.8.16 CEQA Considerations

This section is included in this EIS for future use by CEQA Lead and Responsible agencies, and is not required under NEPA.

CEQA Significance Criteria

The significance criteria listed below are from the Environmental Checklist Form in Appendix G of the CEQA Guidelines. They are used to determine whether the proposed project or alternatives would result in significant impacts under CEQA related to fire and fuels management. The proposed project and alternatives would result in a significant impact related to fire and fuels management if they would:

Fire-1 Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

CEQA Significance Determination

Alternative 1. Under Alternative 1, the proposed DHSP would not be approved by the BLM, and BLM would not amend the CDCA Plan. As a result, no solar energy project would be constructed on the project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no ground disturbance. As a result, impacts caused by project-related wildfires to people and the environment would not occur.

Alternative 2. Under Alternative 2, the proposed DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site available for future solar energy development. As a result, the DHSP would not be constructed on the project site and BLM would manage the site consistent with the amended land use designation in the CDCA Land Use Plan. No impacts from the DHSP would occur.

Alternative 3. Under Alternative 3, the proposed DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site unavailable for future solar energy development. As a result, the DHSP would not be constructed on the project site and BLM would manage the site consistent with the amended land use designation in the CDCA Land Use Plan. No impacts from the DHSP would occur.

Alternative 4. During construction, operation and maintenance, and decommissioning of Alternative 4, risk of wildfires would be increased by combustion of native materials, smoking, and refueling and operating vehicles and other equipment and hazardous materials off road (CEQA significance criterion Fire-1). MM FIRE-1 (a project-specific Fire Prevention Plan) establishes standards and practices that would minimize the risk of a wildfire and, in the event of fire, provide for immediate suppression and notification. MM PHS-5 (a project-specific Emergency Response and Inventory Plan) and MM PHS-7 (a project-specific fire services agreement with Riverside County and BLM) provide additional requirements related to emergency response. Alternative 4 could also indirectly increase wildfire risks by restricting access to the project site. To reduce risks related to restricted site access, MM FIRE-1 (a project-specific Fire Prevention Plan), which includes 24-hour site access for fire agencies and a wildfire traffic management plan, would be implemented.

Construction, operation, and decommissioning could also introduce non-native plants to the proposed project landscape. As described in Section 4.8.6, above, certain non-native plants tend to increase a landscape's susceptibility to wildfire, and non-native plant invasions can result in increased fire frequency beyond what is normal under native conditions, putting nearby residents, structures, personnel, and native habitats at risk of harm from wildfire and resulting in a significant impact. To reduce the risk of invasion of non-native plants, and to control any introductions of non-native species on an ongoing basis, Mitigation Measure VEG-9 (Integrated Weed Management Plan) would be implemented. Therefore, with implementation of MM VEG-9, project construction, operation, and maintenance would not expose people or structures to a significant risk of injury or loss as a result of wildfire. With the implementation of these mitigation measures, potential impacts from wildfire would be less than significant.

As described in Section 4.8.15, the effects of surrounding projects on emergency response to fire could be cumulatively substantial. The likelihood of simultaneous fires at more than one project site is low, but such a circumstance could strain local emergency response capacity. With implementation of mitigation measures to minimize weed introduction and ignition sources and to ensure personnel are trained in emergency response as described in Mitigation Measures FIRE-1 (a project-specific Fire Prevention Plan), MM PHS-5 (a project-specific Emergency Response and Inventory Plan), MM PHS-7 (a project-specific fire services agreement with Riverside County and BLM), and MM VEG-9 (Integrated Weed Management Plan), the contribution of Alternative 4 to an increase in regional fire risk would not be cumulatively considerable.

Alternative 5. As described in Section 4.8.7 of this EIS, potential fire-related effects of Alternative 5 would be largely the same as under Alternative 4; as such, potential impacts to fire and fuels management during construction, operation and maintenance, and decommissioning would be the same as described above for Alternative 4.

Alternative 6. As described in Section 4.8.8 of this EIS, potential fire-related effects of Alternative 6 would be largely the same as under Alternative 4; as such, potential impacts to fire and fuels management during construction, operation and maintenance, and decommissioning would be the same as described above for Alternative 4.

Alternative 7. As described in Section 4.8.8 of this EIS, potential fire-related effects of Alternative 7 would be largely the same as under Alternative 4; as such, potential impacts to fire and fuels management during construction, operation and maintenance, and decommissioning would be the same as described above for Alternative 4.

Alternative A. Under Alternative A, no gen-tie line would be constructed and no plan amendment would be issued. If this No Action Alternative were selected, the construction and impacts of the gen-tie line would not occur, and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because there would be no amendment to the CDCA Plan and no gen-tie line approved for the site under this alternative, it is expected that proposed tower locations and pull sites would continue to remain in their existing conditions, with no new structures constructed or operated on and no ground disturbance. As a result, impacts caused by project-related wildfires to people and the environment would not occur.

Alternative B. Like Alternatives 4 through 7, Alternative B would be located in an area of Riverside County that has been determined to have a low to moderate susceptibility to wildfire. Direct effects of construction would be similar to those described in Alternative 4. These effects would be reduced because of the smaller workforce, reduced equipment requirements, and smaller area of disturbance. These effects would be reduced by MM FIRE-1 (a project-specific Fire Prevention Plan),MM PHS-5 (a project-specific Emergency Response and Inventory Plan) and MM PHS-7 (a project-specific fire services agreement with Riverside County and BLM).

Construction of Alternative B could introduce non-native plants to the project landscape. The indirect effects of construction of Alternative B would be similar to those described in Alternative 4 but reduced because of the smaller workforce, fewer equipment requirements, and smaller area of disturbance. Because Alternative B would introduce new overhead structures, this alternative could cause potential conflicts with aerial fire-fighting. To prevent these conflicts, MM

FIRE-1 requires coordinating with and providing gen-tie line maps to local fire agencies. MM VEG-9 (Integrated Weed Management Plan) would be implemented to reduce impacts related to non-native plants. With the implementation of these measures, impacts related to wildfire would be less than significant.

Alternative B would not contribute to cumulative effects, as the cumulative scenario assumes concurrent construction of the Desert Sunlight approved gen-tie and Alternative B conductor stringing using the same crew at the same time, with no additional work required for Alternative B beyond what is required for the Desert Sunlight gen-tie.

Alternative C. As described in Section 4.8.12 of this EIS, potential fire-related effects of Alternative C would be largely the same as under Alternative B; as such, potential impacts to fire and fuels management during construction, operation and maintenance, and decommissioning would be the same as described above for Alternative B.

Cumulative impacts of Alternative C and surrounding projects would be similar to those described in Alternative 4, but reduced given Alternative C's smaller scale and workforce requirements.

Alternative D. As described in Section 4.8.13 of this EIS, potential fire-related effects of Alternative D would be largely the same as under Alternative B; as such, potential impacts to fire and fuels management during construction, operation and maintenance, and decommissioning would be the same as described above for Alternative B.

Cumulative impacts of Alternative D and surrounding projects would be similar to those described for Alternative C.

Alternative E. As described in Section 4.8.14 of this EIS, potential fire-related effects of Alternative D would be largely the same as under Alternative B; as such, potential impacts to fire and fuels management during construction, operation and maintenance, and decommissioning would be the same as described above for Alternative B.

Cumulative impacts of Alternative E and surrounding projects would be similar to those described for Alternative C.

4.9 SOILS AND GEOLOGY

4.9.1 Methodology for Analysis

This section describes the geologic hazards effects and effects on soil resources that would occur with the implementation of the proposed project or alternatives. The analysis evaluates the effect of construction, operation and maintenance, and decommissioning.

The potential effects related to geologic hazards were evaluated by assessing if there would be life/safety concerns or effects to proper function of the Desert Harvest Solar Project (DHSP) as a result of a seismic event. The potential impact associated with loss of soils due to erosion by either water or wind was also evaluated. This analysis is based on publicly available resources including journal articles and databases related to seismic hazards; technical reports prepared by the Applicant; and soil data from the National Resources Conservation Service (NRCS). This information was reviewed within the context of applicable federal, state and local regulations.

Table 4.9-1 provides an overview of acreages of temporary and permanent disturbance related to the proposed project and alternatives. The potential for seismic hazards remains unchanged by any of the alternatives proposed.

Table 4.9-1. Comparison of Action Alternative Features Relevant to Soil Resources

	Solar Site Alternatives				Gen-Tie Line Alternatives			
	Alt 4	Alt 5	Alt 6	Alt 7	Alt B	Alt C	Alt D	Alt E
Total ROW	—	—	—	—	256	256	226	213
Temporary Access Roads	—	—	—	—	0	22.2	18.2	17.4
Permanent Disturbance	1,208	1,161	1,044	1,044	0	92	86	77

4.9.2 Applicant Measures

The following Applicant Measures (AMs) have been incorporated as design features of the proposed project (and all action alternatives) and shall be implemented to reduce adverse impacts associated with the project. In some cases, mitigation measures further clarify or expand on AM reporting requirements, timing of implementation, or other details where appropriate. Where there is a conflict between provisions of the mitigation measures imposed and the following AMs, the mitigation measures take precedence.

AM GEO-1 **Design Plan.** Project structures shall be built in accordance with the design-basis recommendations in the project-specific geotechnical investigation report. Structure designs must meet the requirements of all applicable federal, state, and county permits and building codes.

AM GEO-2 **Design Features.** The Applicant will implement the following design features to reduce effects from wind and water erosion to soils:

- Obtain coverage under the NPDES General Permit for Storm Water Discharges Associated with Construction Activity (General Permit) Water Quality Order 2009-0009 DWQ;

- Use nonhazardous dust suppressants approved by the BLM and water on an as-needed basis to suppress wind-blown dust generated at the site during construction. Dust palliatives also would be applied between rows of solar panels for dust suppression during operation;
- Implement erosion control measures during construction; and
- Use silt fences for erosion control in the event of a storm event along neighboring properties and along the main drainage adjacent to the solar facility site.

4.9.3 Alternative 1 – No Action (No Plan Amendment)

Under Alternative 1, the DHSP would not be approved by the BLM, and BLM would not amend the CDCA Land Use Plan of 1980, as amended (CDCA Plan). As a result, no solar energy project would be constructed on the project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no ground disturbance. As a result, effects from the project would not occur.

4.9.4 Alternative 2 – No Project Alternative (with Plan Amendment to Find the Site Suitable for Solar Energy Development)

Under Alternative 2, the DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site available for future solar energy development. As a result, the DHSP would not be constructed on the project site and BLM would manage the site consistent with the amended land use designation in the CDCA Plan. It is possible that, as a result of the CDCA Plan amendment, that in the future another solar energy generation project could be proposed with impacts similar to the DHSP, however, such impacts are speculative at this time, and no effects from the Proposed Action would occur.

4.9.5 Alternative 3 – No Project Alternative (with Plan Amendment to Find the Site Unsuitable for Solar Energy Development)

Under Alternative 3, the DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site unavailable for future solar energy development. As a result, the DHSP would not be constructed on the project site and BLM would manage the site consistent with the amended land use designation in the CDCA Land Use Plan. No impacts from the DHSP would occur.

4.9.6 Alternative 4 – Proposed Solar Project

Construction

Direct Effects

Construction of Alternative 4 would require clearance of 1,208 acres of lands with the project study area. Development of the solar facility site is described in Section 2.4 (Alternative 4). In

addition to the solar array and internal roads, other permanent land uses include the O&M facility and on-site substation. The site would be graded to clear and grub plants, followed by minimal cut and fill depths, averaging about 5 inches. No import material would be used. The site would then be compacted to allow vehicle access and equipment installation.

Water and Wind Erosion of Soils. As stated in Section 3.9, relict, old, or inactive dune deposits exist scattered throughout the project study area. Because of limited sand sources, the potential for wind-driven sand erosion of Alternative 4 is low (BLM 2011). Disturbance to existing cryptobiotic soil crusts and/or desert pavement on the solar facility site could result in a substantial increase in on-site wind- and waterborne soil erosion. However, these potential impacts will be addressed by a combination of project design features and mitigation measures. MM AIR-1 (Fugitive Dust Control Plan) would increase soil stabilization and minimize wind erosion/fugitive dust by requiring dust control measures such as paving the main access road, stabilizing unpaved roads, watering graded material, discontinuing construction during windy conditions, limiting traffic speeds, and regulating haul materials (see Section 4.2.6 in Air Quality for full MM). To ensure that dust suppression efforts would not increase offsite erosion, AM GEO-2 (design features) identifies BMPs, such as erosion control and use of dust suppressants, that would be used to ensure that water used for dust suppression would be contained within the construction area. This measure would be supplemented by MM WAT-1 (demonstrate compliance with water quality permits) and MM WAT-4 (drainage design specifications). With the implementation of these measures, there would be no unavoidable adverse effects related to potential soil erosion associated with the construction of Alternative 4.

Indirect Effects

Seismic and Geologic Hazards. Alternative 4 is approximately 10 miles from the Blue Cut fault system and 29 miles from the Pinto Mountain fault zone. During construction, regional seismic hazards could expose site workers to seismic hazards, including being struck by project infrastructure that may move as a result of seismic shaking or by being present in an unstable indoor area; however, seismic events are infrequent and would not be highly likely to occur during the construction phase. Implementation of design characteristics that comply with the 2010 California Building Code (CBC) would reduce seismic effects by ensuring that occupied buildings are constructed safely to withstand seismic shaking. In addition, implementation of MM PHS-5 (Emergency Response Plan) would ensure that emergency response is organized and coordinated at the solar facility site during construction, including in the event of a seismic or geologic hazard.

Other geologic hazards, including liquefaction, seismically induced subsidence, tsunamis, seiches and slope instability are not applicable to the construction of Alternative 4. Though groundwater levels at the solar facility site may fluctuate with precipitation, irrigation, drainage, and regional pumping from wells, groundwater is estimated to be greater than 50 feet below ground surface based on levels recorded in wells found in the area. As a result, soil susceptibility to liquefaction during a seismic event is not considered likely. Section 4.20, Water Resources, has a comprehensive analysis of groundwater effects associated with the project. As stated in Section 3.9, the project study area is within a Riverside County-designated “susceptible” subsidence zone (Riverside County 2003). Compaction of soils during construction would prevent subsidence of soils at the solar facility during a seismic event. AM GEO-1 requires the project owner to include, as part of the construction design plans for the project, any additional mitigation

measures indicated by the upcoming geotechnical survey related to final engineering design of project elements. The DHSP area is neither coastal nor near any large body of water; therefore, it would not be subject to tsunami or seiche.

Sand Transport. There are no sand dunes within the solar facility site, although there are dunes in the vicinity. Because there are no sand dunes on site, Alternative 4 would not interfere with Aeolian sand transport. Fluvial (water-borne) sand transport would also be unaffected by construction of Alternative 4, as the construction of solar panels would not impede downslope water flow through the site.

Operation and Maintenance

Direct Effects

Water and Wind Erosion of Soils. During operation and maintenance, the potential soil erosion effects from water and wind would be minimal. Implementing AM GEO-2 (design features, described in Section 4.9.2 above)) at a frequency detailed in a future operations and maintenance plan as approved by the BLM would reduce any potential effects from water and wind erosion. This measure would be supplemented by MM AIR-3 (control fugitive dust from unpaved roads during operation), which would increase soil stabilization and minimize wind erosion/fugitive dust. MM WAT-1 would ensure the project owner complies with water quality permits and minimizes any water-related soil erosion on the project site during construction.

Indirect Effects

Seismic and Geologic Hazards. The operation and maintenance of Alternative 4 would expose people and/or structures to the same seismic hazards as described for construction. However, the implementation of an Emergency Response and Inventory Plan (MM PHS-5) would minimize these potential effects.

Sand Transport. The operation and maintenance of the project would not interfere with Aeolian sand transport or with water-borne sand transport.

Decommissioning

Direct Effects

Water and Wind Erosion of Soils. During decommissioning of Alternative 4, the potential soil erosion effects from water and wind would be expected to be similar to those described for construction as similar types of equipment and activities would be required. Implementing AM GEO-2 (Design Features) as detailed in an operations and maintenance plan as approved by the BLM would reduce any potential effects from water and wind erosion. This measure would be supplemented by MM AIR-1 (Fugitive Dust Control Plan), which would increase soil stabilization and minimize wind erosion/fugitive dust. MM WAT-1 would ensure the project owner complies with water quality permits and minimizes any water-related soil erosion.

Indirect Effects

Seismic and Geologic Hazards. The decommissioning of Alternative 4 would have similar effects as construction. Facilities would be removed and land reclaimed. Decommissioning of Alternative 4 would expose people and/or structures to the same effects as during construction.

Implementing MM PHS-5 would minimize these potential effects. After decommissioning, facilities would be removed and land reclaimed, bringing an end to seismic related risk from this alternative.

Sand Transport. Decommissioning Alternative 4 would not interfere with Aeolian sand transport or with water-borne sand transport.

Mitigation Measures

In addition to the Applicant Measures identified above, the following mitigation measures are required for Alternative 4.

MM AIR-1 **The project owner shall develop a Fugitive Dust Control Plan in compliance with SCAQMD Rule 403 to reduce PM10 and PM2.5 emissions during construction** (full text in Section 4.2 [Air Resources])

MM AIR-3 **The project owner shall control fugitive dust from the unpaved roads on the site during operation** (full text in Section 4.2 [Air Resources])

MM WAT-1 **Demonstrate compliance with water quality permits** (full text in Section 4.20 [Water Resources])

MM WAT-4 **Stormwater Pollution Prevention Plan and Drainage Design Specifications**. (full text in Section 4.20 [Water Resources])

MM PHS -5 **A project-specific Emergency Response and Inventory Plan shall be prepared** (full text in Section 4.13 [Public Health and Safety])

Residual Impacts and Unavoidable Adverse Effects

With the implementation of mitigation, the construction, operation and maintenance, and decommissioning of Alternative 4 would not result in any unavoidable adverse effects.

4.9.7 Alternative 5 – Solar Project Excluding WHMA

Construction

Although Alternative 5 covers a slightly smaller area than Alternative 4, the direct and indirect effects on soil and geological resources of Alternative 5's construction will be the same as those described for Alternative 4.

Operation and Maintenance

Operation and maintenance of Alternative 5 would be nearly identical to that of Alternative 4, and effects would be consistent with those listed for Alternative 4.

Decommissioning

Decommissioning of Alternative 5 would be nearly identical to that of Alternative 4, and effects would be consistent with those listed for Alternative 4.

Mitigation Measures

The same mitigation measures would apply to Alternative 5 as apply to Alternative 4.

Residual Impacts and Unavoidable Adverse Effects

With the implementation of mitigation, the construction, operation and maintenance, and decommissioning of Alternative 5 would not result in any unavoidable adverse effects.

4.9.8 Alternative 6 – Reduced Footprint Solar Project

Construction

Although Alternative 6 covers a slightly smaller footprint and would revise the solar panel layouts compared with Alternative 4, the direct and indirect effects on soil and geological resources of Alternative 6's construction will be the same as those described for Alternative 4.

Operation and Maintenance

Operation and maintenance of Alternative 6 would be nearly identical to that of Alternative 4, and effects would be consistent with those listed for Alternative 4.

Decommissioning

Decommissioning of Alternative 6 would be nearly identical to that of Alternative 4, and effects would be consistent with those listed for Alternative 4.

Mitigation Measures

The same mitigation measures would apply to Alternative 6 as would apply to Alternative 4.

Residual Impacts and Unavoidable Adverse Effects

With the implementation of mitigation, the construction, operation and maintenance, and decommissioning of Alternative 6 would not result in any unavoidable adverse effects.

4.9.9 Alternative 7 – High-Profile Reduced Footprint Solar Project

Construction

Although Alternative 7 covers a slightly smaller footprint and would increase the solar panel height compared with Alternative 4, the direct and indirect effects on soil and geological resources of Alternative 7's construction will be the same as those described for Alternative 4.

Operation and Maintenance

Operation and maintenance of Alternative 7 would be nearly identical to that of Alternative 4, and effects would be consistent with those listed for Alternative 4.

Decommissioning

Decommissioning of Alternative 7 would be nearly identical to that of Alternative 4, and effects would be consistent with those listed for Alternative 4.

Mitigation Measures

The same mitigation measures would apply to Alternative 7 as would apply to Alternative 4.

Residual Impacts and Unavoidable Adverse Effects

With the implementation of mitigation, the construction, operation and maintenance, and decommissioning of Alternative 7 would not result in any unavoidable adverse effects.

4.9.10 Alternative A – No Gen-Tie

Under Alternative A, no gen-tie line would be constructed and no plan amendment would be issued. If this No Action Alternative were selected, the construction and effects of the gen-tie line would not occur, and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan. Because there would be no amendment to the CDCA Plan and no gen-tie line approved for the site under this alternative, it is expected that proposed tower locations and pull sites would continue to remain in their existing conditions, with no new structures constructed or operated on and no ground disturbance. As a result, effects caused to soils and geology and the seismic risks related to the gen-tie would not occur.

4.9.11 Alternative B – Proposed Gen-Tie (Shared Towers)

Construction

Alternative B would share transmission infrastructure with the approved Desert Sunlight Solar Farm (DSSF) project; however, the baseline for environmental effects is the existing condition of the site in September 2011. At this time, construction of the DSSF transmission infrastructure had not yet commenced, so analysis of Alternative B must include all construction effects of this shared infrastructure.

Construction of Alternative B within the 12.1-mile by 160-foot-wide transmission corridor, plus additional fan-shaped areas at corners, would result in the permanent disturbance of 92 acres along the route, as described in Section 2.8 (Alternative B).

Direct Effects

Wind and Water Erosion of Soils. Construction of Alternative B would require clearance of an estimated 92 acres. Permanent land use would include tower foundations and permanent access roads. Permanent roads, temporary areas around each pole location, puller and tensioner sites, and wire setup sites would be graded and cleared. As with construction of Alternative 4, grading could result in a substantial increase in on-site wind- and waterborne soil erosion. These effects would be minimized by AM GEO-2 and MM AIR-1, which institute specific dust control measures such as use of dust suppressants, erosion control, and development of a fugitive dust control plan.

Indirect Effects

Seismic and Geologic Hazards. Alternative B is approximately 10 miles from the Blue Cut fault system and 29 miles from the Pinto Mountain fault zone. During construction, regional seismic hazards could expose site workers to seismic hazards, including being struck by project infrastructure that may move as a result of seismic shaking or by being present in an unstable

indoor area; however, seismic events are infrequent and would not be highly likely to occur during the construction phase. Other geologic hazards, including liquefaction, seismically induced subsidence, tsunamis, seiches and slope instability are not applicable to the construction of Alternative B (see Section 4.9.6). AM GEO-1 requires the project owner to include, as part of the construction design plans for the solar project, any mitigation measures provided by the upcoming geotechnical survey which would include appropriate engineering design elements. In addition, implementation of MM PHS-5 (Emergency Response Plan) would ensure that emergency response is organized and coordinated at the Alternative B site during construction, including in the event of a seismic or geologic hazard.

Sand Transport. The construction of Alternative B would not affect Aeolian or water-borne sand transport.

Operation and Maintenance

Direct Effects

Wind and Water Erosion of Soils. During operation and maintenance, the potential soil erosion effects would be minimal.

Indirect Effects

Seismic and Geologic Hazards. Operating and maintaining this transmission corridor would expose people and/or structures to the same seismic hazards as described for construction; however, the exposure of workers to seismic hazards would be reduced due to the limited amount of operations and maintenance expected. These effects would be minimized by the AM GEO-1 which requires a design plan that incorporates recommendations from a geotechnical survey and implementation of an Emergency Response and Inventory Plan (MM PHS-5).

Sand Transport. Alternative B is not located within the sand transport corridor.

Decommissioning

Direct Effects

Wind and Water Erosion of Soils. During decommissioning of Alternative B, the potential soil erosion effects would be minimal, and would be expected to be similar to those identified for construction. To the extent they occur, these effects would be minimized by AM GEO-2 and the other mitigation measures identified for Alternative 4.

Indirect Effects

Seismic and Geologic Hazards. Decommissioning of Alternative B would expose people and/or structures to the same effects as during construction. These effects would be minimized by the mitigation proposed for construction. After decommissioning, facilities would be removed and land reclaimed, bringing an end to seismic related risk from this alternative.

Sand Transport. Alternative B is not located within the sand transport corridor.

Mitigation Measures

The same mitigation measures would apply to Alternative B as would apply to Alternative 4.

Residual Impacts and Unavoidable Adverse Effects

With the implementation of mitigation, the construction, operation and maintenance, and decommissioning of Alternative B would not result in any unavoidable adverse effects.

4.9.12 Alternative C – Separate Transmission Towers within Same ROW

Construction

Construction of Alternative C within the 12.1-mile by 160-foot-wide transmission corridor, plus additional fan-shaped areas at corners, would result in the permanent disturbance of 92 acres along the route, as described in Section 2.9 (Alternative C).

Because they occur in the same ROW and follow parallel paths, the effects of constructing Alternative C on seismic and geologic hazards as well as on erosion and sand transport would be the same as those discussed for Alternative B.

Operation and Maintenance

Because they occur in the same ROW and follow parallel paths, the effects of operation and maintenance of Alternative C on seismic and geologic hazards as well as on erosion and sand transport would be the same as those discussed for Alternative B.

Decommissioning

Because they occur in the same ROW and follow parallel paths, the effects of decommissioning Alternative C on seismic and geologic hazards as well as on erosion and sand transport would be the same as those discussed for Alternative B.

Mitigation Measures

The same mitigation measures would apply to Alternative C as would apply to Alternative 4.

Residual Impacts and Unavoidable Adverse Effects

With the implementation of mitigation, the construction, operation and maintenance, and decommissioning of Alternative C would not result in any unavoidable adverse effects.

4.9.13 Alternative D – Cross-Valley Alignment

Construction

Construction of Alternative D within the 10.5-mile by 160-foot-wide transmission corridor, plus additional fan-shaped areas at corners, would result in permanent disturbance of 86 acres along the route, as described in Section 2.10 (Alternative D).

Alternative D would disturb a similar area of land area and occur in a nearly identical geological setting as Alternative B. Therefore, the effects of construction of Alternative D on seismic and geologic hazards as well as on erosion and sand transport would be nearly identical to those discussed for Alternative B.

Operation and Maintenance

Alternative D would disturb a similar area of land area and occur in a nearly identical geological setting as Alternative B. Therefore, the effects of operating and maintaining Alternative D on seismic and geologic hazards as well as on erosion and sand transport would be nearly identical to those discussed for Alternative B.

Decommissioning

Alternative D would disturb a similar area of land area and occur in a nearly identical geological setting as Alternative B. Therefore, the effects of decommissioning Alternative D on seismic and geologic hazards as well as on erosion and sand transport would be nearly identical to those discussed for Alternative B.

Mitigation Measures

The same mitigation measures would apply to Alternative D as would apply to Alternative 4.

Residual Impacts and Unavoidable Adverse Effects

With the implementation of mitigation, the construction, operation and maintenance, and decommissioning of Alternative D would not result in any unavoidable adverse effects.

4.9.14 Alternative E – New Cross-Valley Alignment

Construction

Construction of Alternative E within the 11.5-mile by 160-foot-wide transmission corridor, plus additional fan-shaped areas at corners, would result in permanent disturbance of 77 acres along the route, as described in Section 2.11 (Alternative E).

Alternative E would disturb a similar area of land area and occur in a nearly identical geological setting as Alternative B. Therefore, the effects of construction of Alternative E on seismic and geologic hazards as well as on erosion would be nearly identical to those discussed for Alternative B. However, Alternative E would traverse a sand-transport corridor along an approximately 1-mile segment, and construction within the sand-transport area would partially interfere with Aeolian sand transport in the area; over time, sand would pass around the transmission poles and would blow over access roads, resulting in a minimal long-term effect. This effect would be temporary and not substantially adverse given the overall magnitude of the disturbance.

Operation and Maintenance

Alternative E would disturb a similar area of land area and occur in a nearly identical geological setting as Alternative B, with the only difference that Alternative E would traverse an approximately 1-mile segment of a sand-transport corridor. Therefore, the effects of operating and maintaining Alternative E on seismic and geologic hazards as well as on erosion would be nearly identical to those discussed for Alternative B. However, the existence of several transmission poles and access roads within the sand-transport area would partially interfere with Aeolian sand transport in the area. Because the footprint of the transmission poles would be small, the interference with Aeolian sand transport would not be substantially adverse and the sand transport would be able to travel around each transmission pole footprint. If transmission

access roads were to be stabilized with aggregate or bermed, this could represent a substantial adverse change in Aeolian sand transport along the 1-mile segment of Alternative E within the sand-transport corridor. MM VEG-6 (Provide Off-Site Compensation for Impacts to Vegetation and Habitat) in Section 4.3, Biological Resources – Vegetation, includes a requirement to compensate for impacts to windblown and stabilized sand habitat at a 5:1 ratio. This would mitigate the potential effects.

Decommissioning

Alternative E would disturb a similar area of land area and occur in a nearly identical geological setting as Alternative B. Therefore, the effects of decommissioning Alternative E on seismic and geologic hazards as well as on erosion and sand transport would be nearly identical to those discussed for Alternative B.

Mitigation Measures

The same mitigation measures would apply to Alternative E as would apply to Alternative 4, with the addition of the following:

MM VEG-6 Provide Off-Site Compensation for Impacts to Vegetation and Habitat. (full text in Section 4.3, Biological Resources – Vegetation).

Residual Impacts and Unavoidable Adverse Effects

With the implementation of mitigation, the construction, operation and maintenance, and decommissioning of Alternative E would not result in any unavoidable adverse effects.

4.9.15 Cumulative Effects

Geographic Scope

The geographic area considered for cumulative effects related to soils and geologic hazards is within a 0.5-mile radius to the proposed project and alternatives for seismic events and erosion, and within the Aeolian sand transport corridor for impacts to sand transport. Tables 4.1-1 and 4.1-2 in Section 4.1.4 (Cumulative Scenario) list all existing and reasonably foreseeable projects in this area. Table 4.9-2 list the existing and foreseeable projects that would create cumulative soil or geologic effects in combination with any of the solar facility alternatives (Alternative 4 through 7) and the gen-tie line alternatives.

Table 4.9-2. Cumulative Projects within the Geographic Scope of Cumulative Analysis

Resource Area / BLM Program Area	Geographic Area of Consideration	Elements to Consider	BLM Authorized and Other Known County Projects/Actions/Activities
Soils and Geology	Within 0.5 mile of the proposed project for seismic events and erosion, within the Aeolian sand transport corridor for sand transport	Soil, wind, and water erosion, impacts to the sand transport corridor	Seismic Events • Desert Sunlight Solar Farm • Silverado Power Solar Project • Desert Sunlight Transmission Line (Alternatives B and C) • Red Bluff Substation • DPV1 Transmission Line • Blythe Energy Project Transmission Line • I-10 • DPV No. 2 Transmission Line • Chuckwalla Race Track (Alternative D) • Desert Center 50 Solar Project (Alternative D) Sand Transport Corridor • Palen Solar Power Project (Alternative E)

The foreseeable projects that would create cumulative soil or geologic effects in combination with any of the solar field action alternatives (Alternatives 4 through 7) include the DSSF Project and the Silverado Power Solar Project. With respect to the gen-tie line alternatives (Alternatives B through E), Alternative C would have the potential for cumulative effects in combination with the Desert Sunlight transmission line, as Alternative C would utilize the same ROW. Alternative D would have the potential for cumulative effects in combination with the Silverado Power Solar Project, Desert Center 50 Solar Project, and the Chuckwalla Race Track. Alternative E would be within the Aeolian sand transport corridor along with the Palen Solar Power Project. All four gen-tie line alternatives (Alternatives B through E) could result in cumulative effects in combination with the Red Bluff Substation, I-10, and DPV1, DPV2, and the Blythe Energy Project Transmission Line. Alternative B would not have the potential to contribute to cumulative effects, as the cumulative scenario assumes concurrent construction of the Desert Sunlight approved gen-tie and Alternative B conductor stringing using the same crew at the same time, with no additional work required for Alternative B beyond what is required for the Desert Sunlight gen-tie.

The temporal scope of this cumulative analysis is considered the period within which a soils and geologic hazard of the proposed project or an alternative is actively present. Because the operation and maintenance of the DHSP would expose people and/or structures to seismic hazards, a cumulative effect could occur if another project within a 0.5-miles radius would also expose people and/or structures to seismic hazards.

Cumulative Effects Analysis

Past, present, and future projects in the cumulative analysis area would all be susceptible to similar risks from seismic events. Adherence to state and local regulations related to site engineering would be required. The Alternative 4 would implement MM PHS-5 (Emergency Response Plan), and other projects would likely require similar measures. Appropriate engineering and mitigation would minimize both the incremental risk related to Alternative 4 and the overall cumulative effects. Consequently, there would be no substantial adverse cumulative effects related to seismic hazards.

Alternative 4 together with other past, present, and reasonably foreseeable projects have the potential to have adverse cumulative effects related to soil erosion. Any disturbance to surface soils could expose soils to the effects of wind and water. Activities including grading, compaction, drilling, back-filling, and driving on unpaved roadways could disturb soils at any work site, regardless of the type of project. There could potentially be cumulatively additive effects related to wind and water erosion for projects that are in very close proximity and that are undergoing ground disturbing activities at the same time, such as the DSSF and Silverado Power Project. Effects of more distant projects would not be cumulatively additive. However, the incremental effects of the proposed project would be minimal because the project owner would be required to adhere to regulatory requirements and implement AM GEO-2, MM AIR-1, MM AIR-3, MM WAT-1, and MM WAT-4, which would minimize erosion. Similarly, other existing and reasonably foreseeable projects would be required to implement comparable erosion control measures. Wind and water erosion of soil effects are less likely during operation and maintenance of any project due to site coverage by asphalt, concrete, structures, or vegetation.

The geological and soil effects for Alternatives 5 through 7, and C through D would be essentially the same as described for the Alternative 4 and would not represent substantial adverse cumulative effects. The No Action and No Development Action Alternatives (Alternatives 1, 2, 3, and A) would not contribute to any cumulative effects. Alternative B would not contribute to cumulative effects, as the cumulative scenario assumes concurrent construction of the Desert Sunlight approved gen-tie and Alternative B conductor stringing using the same crew at the same time, with no additional work required for Alternative B beyond what is required for the Desert Sunlight gen-tie.

Alternative E's access roads could affect Aeolian sand transport, these effects would be cumulatively additive with effects the Palen Solar Power Project, which would affect Aeolian sand transport in the same sand transport corridor as Alternative E. As noted in the Palen Solar Power Project Final EIS (2010), the impacts of the project as proposed to the sand transport corridor would be regionally-significant. Although the effect of Alternative E on the Aeolian sand transport corridor would be small, it would represent a substantial adverse cumulative effect due to the additive impact of the Palen Solar Power Project as proposed.

4.9.16 CEQA Considerations

CEQA Significance Criteria

The proposed project and alternatives would have a significant impact on geology and soil resources if they would:

GS-1 Expose people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving geologic hazards;

GS-2 Allow people or structures to be subject to strong seismic shaking;

GS-3 Be subject to seismic-related ground failure including liquefaction;

GS-4 Be located where landslides could cause substantial soil erosion or the loss of topsoil or disturb any human remains including those interred outside of formal cemeteries;

GS-5 Be located on expansive soils as defined in Table 18-1B of the Uniform Building Code (1987) that is based in part on the International Building Code that would create substantial risks to life or property;

GS-6 Be located on a geologic unit or soil that is unstable, or would become unstable as a result of the project and potentially result in on-site or off-site landside, lateral spreading, subsidence, liquefaction or collapse;

GS-7 Result in the physical alteration of or damage to geologic features; or

GS-8 Result in substantial soil erosion or loss of topsoil.

For the proposed project and alternatives, the following criteria were determined to be inapplicable or to result in no impact. The determination regarding these significance criteria is discussed below and then these significance criteria are not discussed further in this section.

- Be located on a known earthquake fault as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning map

No component associated with the proposed project and alternatives has been identified within an Alquist-Priolo Earthquake Fault Zone. There would be no impacts under this criterion.

- Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water

The proposed project would require installation of a septic system for the O&M Building. However, no soils within the DHSP area have been identified as unsuitable for septic systems, and therefore there would be no impacts under this criterion.

CEQA Significance Determination

Alternatives 1, 2, and A would not involve construction of the solar project or gen-tie line. These alternatives would have no impacts related to soils or geologic hazards (Criteria G-1 through G-8), and therefore there are no CEQA significance determinations for these alternatives.

Alternative 4

Geologic Hazards. The construction, operation and maintenance, and decommissioning of Alternative 4 in a region prone to seismic events could result in impacts to on-site workers and facilities (CEQA Significance Criteria GS-1, GS-2, GS-4, GS-5, GS-6, and GS-7). Adverse impacts, including loss of property or injury or death, involving rupture of known earthquake faults, strong seismic ground shaking, and seismic-related ground failure would be potentially significant. Soils in the vicinity of Alternative 4 have been identified as susceptible to subsidence during a seismic event. Due to the location of Alternative 4, there would be no potential impacts related to slope instability resulting from a seismic event. With the implementation of MM PHS-5 (Emergency Response Plan), impacts related to seismic events (CEQA significance criteria GS-1, GS-2, GS-4, GS-5, GS-6, and GS-7) would be less than significant. Groundwater is found at sufficient depths that soils within the region are not likely to be subject to liquefaction during a seismic event (CEQA significance criterion GS-3); therefore, no impact would occur from liquefaction.

Soil Erosion. Soils at solar facility site would be susceptible to erosion, especially once soil crusts are disturbed (CEQA Significance Criteria GS-4 and GS-8). Implementation of MM AIR-1 (Fugitive Dust Control Plan) would increase soil stabilization and minimize wind erosion/fugitive dust. AM GEO-2 (design features) identifies BMPs that would be used to ensure that water used for dust suppression would be contained within the construction area. This measure would be supplemented by MM WAT-1 (demonstrate compliance with water quality permits) and MM WAT-4 (drainage design specifications). With the implementation of these measures, impacts related to soil erosion (CEQA Significance Criteria GS-4 and GS-8) would be less than significant.

Cumulative Impacts. With the implementation of mitigation, Alternative 4 would have minimal impacts related to geologic hazards and soil erosion. Therefore, Alternative 4 would not represent a considerable contribution to any cumulative impacts related to geologic hazards or soil erosion (Significance Criteria GS-1 through GS-8).

Alternative 5

Impacts for Significance Criteria GS-1 through GS-8 would be the same for Alternative 5 as for Alternative 4 as discussed in Section 4.9.7.

Alternative 6

Impacts for Significance Criteria GS-1 through GS-8 would be the same for Alternative 6 as for Alternative 4 as discussed in Section 4.9.8.

Alternative 7

Impacts for Significance Criteria GS-1 through GS-8 would be the same for Alternative 7 as for Alternative 4 as discussed in Section 4.9.8.

Alternative B

Geologic Hazards. The construction, operation and maintenance, and decommissioning of Alternative B in a region prone to seismic events could result in impacts to on-site workers and facilities (CEQA Significance Criteria GS-1, GS-2, GS-4, GS-5, GS-6, and GS-7). Adverse impacts, including loss of property or injury or death, involving rupture of known earthquake faults, strong seismic ground shaking, and seismic-related ground failure would be potentially significant. Soils in the vicinity of Alternative B have been identified as susceptible to subsidence during a seismic event. Due to the location of Alternative B, there would be no potential impacts related to slope instability resulting from a seismic event. With the implementation of MM PHS-5 (Emergency Response Plan), impacts related to seismic events (CEQA significance criteria GS-1, GS-2, GS-4, GS-5, GS-6, and GS-7) would be less than significant. Groundwater is found at sufficient depths that soils within the region are not likely to be subject to liquefaction during a seismic event (CEQA significance criterion GS-3); therefore, no impact would occur from liquefaction.

Soil Erosion. Soils at the Alternative B site would be susceptible to erosion, especially once soil crusts are disturbed (CEQA Significance Criteria GS-4 and GS-8). Implementation of MM AIR-1 (Fugitive Dust Control Plan) would increase soil stabilization and minimize wind erosion/fugitive dust. AM GEO-2 (design features) identifies BMPs that would be used to

ensure that water used for dust suppression would be contained within the construction area. This measure would be supplemented by MM WAT-1 (demonstrate compliance with water quality permits) and MM WAT-4 (drainage design specifications). With the implementation of these measures, impacts related to soil erosion (CEQA Significance Criteria GS-4 and GS-8) would be less than significant.

Cumulative Impacts. Alternative B would not contribute to cumulative effects, as the cumulative scenario assumes concurrent construction of the Desert Sunlight approved gen-tie and Alternative B conductor stringing using the same crew at the same time, with no additional work required for Alternative B beyond what is required for the Desert Sunlight gen-tie.

Alternative C

Project-level impacts for Significance Criteria GS-1 through GS-8 would be essentially the same for Alternative C as for Alternative B as discussed in Section 4.9.12.

With the implementation of mitigation, Alternative C would have minimal impacts related to geologic hazards and soil erosion. Therefore, the project would not represent a considerable contribution to any cumulative impacts related to geologic hazards or soil erosion (Significance Criteria GS-1 through GS-8).

Alternative D

Impacts for Significance Criteria GS-1 through GS-8 would be essentially the same for Alternative D as for Alternative C.

Alternative E

Impacts for Significance Criteria GS-1 through GS-8 would be essentially the same for Alternative E as for Alternative C as discussed in Section 4.9.14, except for impacts on Aeolian sand transport as described in Section 4.9.14. The same mitigation measures would apply as appropriate, including MM VEG-6, which would compensate for impacts to Aeolian sand transport. Impacts to the Aeolian sand transport that result from Alternative E could combine with impacts of the Palen Solar Power Project to be cumulatively significant. Implementation of MM VEG-6 will reduce the contribution of Alternative E to less than significant.

4.10 ENERGY AND MINERAL RESOURCES

4.10.1 Methodology for Analysis

This section describes effects on energy and mineral resources from the implementation of the proposed project and alternatives. The following discussion addresses potential environmental effects related to energy and mineral resources associated with construction, operation, and decommissioning of the proposed project and alternatives. A discussion of cumulative effects related to energy and mineral resources is also included in this section. Baseline conditions for the environmental setting relevant to energy and mineral resources are presented in Section 3.10 of this EIS. Construction activities, operation and maintenance activities, and decommissioning of the proposed project or an alternative were evaluated based on their potential to affect the baseline conditions.

4.10.2 Applicant Measures

No Applicant Measures for energy and mineral resources have been identified for the project or alternatives.

4.10.3 Alternative 1 – No Action (No Plan Amendment)

Under Alternative 1, the proposed DHSP would not be approved by the BLM, and BLM would not amend the California Desert Conservation Plan of 1980, as amended (CDCA Plan). As a result, no solar energy project would be constructed on the project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no ground disturbance. As a result, effects from the project would not occur.

4.10.4 Alternative 2 – No Project Alternative (with Plan Amendment to Find the Site Suitable for Solar Energy Development)

Under Alternative 2, the proposed DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site available for future solar energy development. As a result, the DHSP would not be constructed on the project site and BLM would manage the site consistent with the amended land use designation in the CDCA Plan. It is possible that, as a result of the CDCA Plan amendment, that in the future another solar energy generation project could be proposed with impacts similar to the DHSP, however, such impacts are speculative at this time, and no effects from the DHSP would occur.

4.10.5 Alternative 3 – No Project Alternative (with Plan Amendment to Find the Site Unsuitable for Solar Energy Development)

Under Alternative 3, the DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site unavailable for future solar energy development. As a result, the DHSP would not be constructed on the project site and BLM would manage the site consistent with the amended land use designation in the CDCA Land Use Plan. No impacts from the DHSP would occur.

4.10.6 Alternative 4 – Proposed Solar Project

Section 3.10 of this EIS indicates that no oil, gas, or geothermal fields or active mineral claims are located on the solar facility site. Table 3.10-2 (Mineral Resources in the project area) indicates that the Mineral Resources Data System (MRDS), administered by the U.S. Geological Survey (USGS), has record of 3 "past producers" of mineral resources (gold, sand/gravel, and talc-soapstone, respectively) located within 5 miles of the solar facility site. There are no known locatable or salable mineral resources within the solar facility site, and no current producers of energy or mineral resources within 5 miles of the solar facility site.

Construction

Direct and indirect effects to energy and mineral resources resulting from Alternative 4 construction, as discussed below, include those effects which are caused by the action and occur at the same time and place (direct) and those effects which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable (indirect).

Direct Effects

USGS identifies three mineral resource operations within five miles of Alternative 4 (Table 3.10-1), but none of the mines are active. Moreover, no existing operations or mines are located on the solar facility site. Therefore, access to currently active mineral resource operations would not be affected by construction of Alternative 4. Additionally, in 2009, and renewed in 2011, BLM segregated the Riverside East Solar Energy Zone (SEZ), which the project is located, from the operation of the mining law for two years.

Section 2.4.3 (Structures and Facilities) and Table 3.10-3 (Mineral Resources Contained in Project Construction Materials) of this EIS describe that a source(s) of sand and gravel would be required during proposed project construction. Table 3.10-3 also identifies that a source(s) of metallic and non-metallic minerals would be required to produce steel and aluminum for project components, including the transformer, switchyard, transmission line, and PV panels. Appropriate source(s) of sand and gravel in proximity to the solar facility site would be identified by a construction contractor and permitted through the BLM. Sand and gravel resources are common in the project study area, and construction of Alternative 4 would not substantially affect the supply of these minerals. Metallic and non-metallic resources associated with project components would be procured by the manufacturer(s) of such components, and use of these resources would not substantially affect supply of these materials.

Construction of Alternative 4 would also require the use of energy resources in the form of fuel for vehicles and equipment. Energy resources for construction vehicles and equipment are readily available in the project study area, and the consumption of such resources during construction would not constitute a substantial effect.

The proposed solar facility is located in the Draft Solar Programmatic EIS-designated proposed Riverside East SEZ. The Programmatic EIS is evaluating the BLM's proposed actions to establish a new BLM Solar Energy Program applicable to utility-scale solar energy development on BLM-administered lands in six southwestern states (including California). Therefore, the use of the solar facility site for solar energy generation would be consistent with the Solar Energy Zone. Additionally, because the DHSP's Form 299 was filed and accepted by BLM prior to 30 June 2009, the project qualifies as a "pending project" under the terms of the Final Solar

Programmatic EIS (PEIS) and therefore would not be subject to its terms if the PEIS is adopted in its current form.

Indirect Effects

Development of Alternative 4 would not alter the jurisdiction or authority of the BLM related to mineral resources on BLM land. Construction of Alternative 4 would not permanently preclude the availability of the solar facility site for exploration, extraction, and transport of mineral resources. However, use of the solar facility site for renewable energy development would have a temporary impact that would preclude use of that site for mineral resource development for the projected 30-year life of the project.

Operation and Maintenance

Direct Effects

Operation and maintenance activities would include the upkeep of internal access roads, and new gravel may be occasionally applied to ensure the integrity of road surfaces. It is anticipated that the same gravel source(s) used for construction of Alternative 4 would be used during the operation and maintenance phase. As described above, the source(s) of gravel during construction would be identified by a construction contractor and permitted through the BLM. The quantity of aggregate needed for operation and maintenance of Alternative 4would be far less than that needed for construction, and would not substantially affect the supply of these materials.

Metallic and/or non-metallic resources may also be required during operation and maintenance of the project, if certain facilities or infrastructure require replacement. In addition, energy resources in the form of fuel for operational vehicles and equipment would be required. The quantity of these resources needed for operation and maintenance of the project would be far less than would be needed for construction, and the use of these resources would not substantially affect regional supplies.

Access to currently active mineral resource operations would not be affected by operations and maintenance of Alternative 4.

Indirect Effects

Development of Alternative 4 would not alter the jurisdiction or authority of the BLM related to mineral resources on BLM land. Operation and maintenance of Alternative 4 would not permanently preclude the availability of the solar facility site for exploration, extraction, and transport of mineral resources. However, use of the solar facility site for renewable energy development would have a temporary impact that would preclude use of that site for mineral resource development for the projected 30-year life of the project.

Decommissioning

Direct Effects

Decommissioning Alternative 4 would not require a source of mineral resources. Energy resources in the form of fuel for decommissioning vehicles and equipment would be required; however, these resources are readily available in the project study area, and the consumption of such resources during decommissioning would not constitute a substantial effect. Decommis-

sioning Alternative 4 would not directly interfere with any active energy or mining operations, and would not substantially affect supplies of energy or mineral resources.

Indirect Effects

Decommissioning Alternative 4 would not result in any indirect effects to energy or mineral resources.

Mitigation Measures

Construction, operation and maintenance, and decommissioning of Alternative 4 would not result in substantial adverse direct or indirect effects to energy and mineral resources. No mitigation measures are proposed.

Residual Impacts and Unavoidable Adverse Effects

The construction, operation and maintenance, and decommissioning of Alternative 4 would not result in any unavoidable adverse effects.

4.10.7 Alternative 5 – Solar Project Excluding WHMA

Alternative 5 would be constructed in the same location as Alternative 4 and would use the same project boundaries as Alternative 4, except that it would exclude the portion of the site which is within the Palen-Ford Wildlife Habitat Management Area (WHMA).

Construction

Excluding the WHMA from development under Alternative 5 would require a proportionately smaller supply of energy and mineral resources. This difference would be negligible with regards to the potential impacts of Alternative 5 on energy and mineral resources relative to Alternative 4 and therefore the effects of Alternative 5 would be substantially similar to Alternative 4.

Operation and Maintenance

Potential effects to energy and mineral resources associated with operation and maintenance of Alternative 5 would be the same as described in Section 4.10.6 for Alternative 4.

Decommissioning

Potential effects to energy and mineral resources associated with decommissioning of Alternative 5 would be the same as described in Section 4.10.6 for Alternative 4.

Mitigation Measures

Construction, operation and maintenance, and decommissioning of Alternative 5 would not result in substantial adverse direct or indirect effects to energy and mineral resources. No mitigation measures are proposed.

Residual Impacts and Unavoidable Adverse Effects

The construction, operation and maintenance, and decommissioning of Alternative 5 would not result in any unavoidable adverse effects to energy and mineral resources.

4.10.8 Alternative 6 – Reduced Footprint Solar Project

Alternative 6 would be constructed in the same location as Alternative 4, but would exclude the 155-acre southern parcel of Alternative 4 and a small portion of the northern parcel that contains sensitive plant species, crucifixion thorn, as shown on Figure 2-10, Alternative 6: Reduced Footprint Solar Project, in Appendix A.

Construction

Because of its smaller footprint, Alternative 6 would require a proportionately smaller supply of energy and mineral resources. This difference would be negligible with regards to the potential impacts of Alternative 6 on energy and mineral resources relative to Alternative 4, and therefore the effects of Alternative 6 would be substantially the same as Alternative 4.

Operation and Maintenance

Potential effects to energy and mineral resources associated with operation and maintenance of Alternative 6 would be the same as described in Section 4.10.6 for Alternative 4.

Decommissioning

Potential effects to energy and mineral resources associated with decommissioning of Alternative 6 would be the same as described in Section 4.10.6 for Alternative 4.

Mitigation Measures

Construction, operation and maintenance, and decommissioning of Alternative 6 would not result in substantial adverse direct or indirect effects to energy and mineral resources. No mitigation measures are proposed.

Residual Impacts and Unavoidable Adverse Effects

The construction, operation and maintenance, and decommissioning of Alternative 6 would not result in any unavoidable adverse effects to energy and mineral resources.

4.10.9 Alternative 7 – High-Profile Reduced Footprint Solar Project

Alternative 7 would be constructed within the same project boundaries as Alternative 6. Alternative 7 would encompass an estimated 1,044 acres and would be an estimated 150 MW nominal capacity project. Project details are the same as for Alternative 4, with the only exception being the overall height of the panels for Alternative 7. Alternative 7 would use high-profile single-axis tracking panels that would have a total height of 15 feet.

Construction

Because of its smaller footprint, Alternative 7 would require a proportionately smaller supply of energy and mineral resources. This difference would be negligible with regards to the potential impacts of Alternative 7 on energy and mineral resources relative to Alternative 4, and therefore the effects of Alternative 7 would be substantially the same as Alternative 4.

Operation and Maintenance

Potential effects to energy and mineral resources associated with operation and maintenance of Alternative 7 would be the same as described in Section 4.10.6 for Alternative 4.

Decommissioning

Potential effects to energy and mineral resources associated with decommissioning of Alternative 7 would be the same as described in Section 4.10.6 for Alternative 4.

Mitigation Measures

Construction, operation and maintenance, and decommissioning of Alternative 7 would not result in substantial adverse direct or indirect effects to energy and mineral resources. No mitigation measures are proposed.

Residual Impacts and Unavoidable Adverse Effects

The construction, operation and maintenance, and decommissioning of Alternative 7 would not result in any unavoidable adverse effects to energy and mineral resources.

4.10.10 Alternative A – No Gen-Tie

Under Alternative A, no gen-tie line would be constructed or operated as part of the DHSP. Therefore, no energy and mineral resources effects related to construction, operations and maintenance, or decommissioning would occur.

Mitigation Measures

No mitigation measures for energy and mineral resources are required for Alternative A.

Residual Impacts and Unavoidable Adverse Effects

No energy or mineral resources effects would result from the implementation of Alternative A.

4.10.11 Alternative B – Proposed Gen-Tie (Shared Towers)

Under Alternative B, the proposed gen-tie would utilize transmission infrastructure developed for First Solar's Desert Sunlight Solar Farm (DSSF) project by sharing the approved transmission towers. However, the baseline for environmental effects is the existing condition of the site in September 2011. At that time, construction of the DSSF transmission infrastructure had not yet commenced, so analysis of Alternative B includes all construction effects of this shared infrastructure.

Construction

Direct Effects

USGS identifies three mineral resource operations within five miles of project study area (Table 3.10-1). One of the mines is adjacent to Alternative B, but none of the mines is active. Therefore, access to currently active mineral resource operations would not be affected by construction of Alternative B.

Source(s) of energy and mineral resources would be required during construction of Alternative B due to infrastructure associated with transmission towers and the need to use construction vehicles and equipment. Appropriate source(s) of sand and gravel in proximity to the Alternative B site would be identified by a construction contractor and permitted through the BLM. Sand and gravel resources are common in the area, and construction of Alternative B would not result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state, or of a locally important mineral resource recovery site. Construction of Alternative B would not directly interfere with any active energy or mining operations, and would not substantially affect supplies of energy or mineral resources.

Indirect Effects

Development of Alternative B would not alter the jurisdiction or authority of the BLM related to mineral resources on BLM land and would not permanently preclude the availability of the gen-tie line alignment for exploration, extraction, and transport of mineral resources.

Operation and Maintenance

Operation and maintenance of Alternative B may include repair or replacement of the gen-tie line, as necessary, and such activities could potentially require a source of energy resources for fuel associated with vehicles and equipment, and a source of mineral resources associated with the repair or replacement of project features. If needed, it is anticipated that the same source(s) of energy and mineral resources used for construction of Alternative B would be used during the operation and maintenance phase. Operation and maintenance of Alternative B would not result in the loss of availability of an active mineral recovery operation or substantially affect supplies of mineral or energy resources.

Indirect Effects

Development of Alternative B would not alter the jurisdiction or authority of the BLM related to mineral resources on BLM land and would not permanently preclude the availability of the gen-tie line alignment for exploration, extraction, and transport of mineral resources.

Decommissioning

Decommissioning of Alternative B would not require a source of mineral resources. Energy resources in the form of fuel for decommissioning vehicles and equipment would be required; however, energy demands associated with decommissioning are readily available in the project study area, and the consumption of such resources during decommissioning would not constitute a substantial effect. Decommissioning of Alternative B would not directly interfere with any active mining operations and would not constitute a substantial effect on regional energy or mineral supplies.

Mitigation Measures

Construction, operation and maintenance, and decommissioning of Alternative B would not result in substantial adverse direct or indirect effects to energy and mineral resources such that mitigation measures are required. No mitigation measures are proposed.

Residual Impacts and Unavoidable Adverse Effects

The construction, operation and maintenance, and decommissioning of Alternative B would not result in any unavoidable adverse effects.

4.10.12 Alternative C – Separate Transmission Towers within Same ROW

Under Alternative C, the gen-tie line would parallel the approved DSSF gen-tie line, and would be located on separate towers within the DSSF ROW. The same number of towers in a nearly identical alignment to that of the DSSF gen-tie line would be constructed, and potential effects to energy and mineral resources associated with the Alternative C gen-tie line would be the same as potential effects to energy and mineral resources associated with the DSSF gen-tie line.

Construction

The effects of the construction of Alternative C would be the same as those of Alternative B.

Operation and Maintenance

The effects of operations and maintenance of Alternative C would be the same as those of Alternative B.

Decommissioning

The effects of decommissioning of Alternative C would be the same as those of Alternative B.

Mitigation Measures

Construction, operation and maintenance, and decommissioning of Alternative C would not result in substantial adverse direct or indirect effects to energy and mineral resources. No mitigation measures are proposed.

Residual Impacts and Unavoidable Adverse Effects

The construction, operation and maintenance, and decommissioning of Alternative C would not result in any unavoidable adverse effects.

4.10.13 Alternative D – Cross-Valley Alignment

Construction, operation and maintenance, and decommissioning of Alternative D would be the same as described for Alternatives B and C, except it would require slightly less temporary and permanent ground disturbance.

Construction

The effects of the construction of Alternative D would be the same as those of Alternative B.

Operation and Maintenance

Effects of operations and maintenance of Alternative D would be the same as for Alternative B.

Decommissioning

Effects of decommissioning of Alternative D would be the same as for Alternative B.

Mitigation Measures

Construction, operation and maintenance, and decommissioning of Alternative D would not result in substantial adverse direct or indirect effects to energy and mineral resources. No mitigation measures are proposed.

Residual Impacts and Unavoidable Adverse Effects

The construction, operation and maintenance, and decommissioning of Alternative D would not result in any unavoidable adverse effects.

4.10.14 Alternative E – New Cross-Valley Alignment

Construction, operation and maintenance, and decommissioning of Alternative E would be essentially the same as described for Alternative B, though permanent ground disturbance would be slightly reduced.

Construction

Effects would be the same for Alternative E as described above for Alternative D.

Operation and Maintenance

Effects would be the same as described for Alternative B.

Decommissioning

Effects would be the same as described for Alternative B.

Mitigation Measures

Construction, operation and maintenance, and decommissioning of Alternative E would not result in substantial adverse direct or indirect effects to energy and mineral resources. No mitigation measures are proposed.

Residual Impacts and Unavoidable Adverse Effects

The construction, operation and maintenance, and decommissioning of Alternative E would not result in any unavoidable adverse effects.

4.10.15 Cumulative Effects

Cumulative effects to energy and mineral resources can result from individually minor but collectively significant actions taken over time. Major past, present, and reasonably anticipated future projects in the area have been identified in Section 4.1.4 (Cumulative Scenario) of this EIS, and include energy generation, military uses, commercial and residential developments, and roadway improvements.

Geographic Scope

The geographic area considered for cumulative effects related to energy and mineral resources is within five miles of the proposed project and alternatives. A number of alternative energy projects are proposed within 5 miles, (see Tables 4.1-1 and 4.1-2 in Section 4.1. Table 4.10-1 lists the

existing and foreseeable projects that could combine with the DHSP to result in cumulative effects on mineral resources.

Table 4.10-1. Cumulative Projects within the Geographic Scope of Cumulative Analysis

Resource Area / BLM Program Area	Geographic Area of Consideration	Elements to Consider	BLM Authorized and Other Known County Projects/Actions/Activities
Energy and Minerals	Within 5-mile radius of the proposed project and alternatives	Loss of available energy and mineral resources	For the proposed project and all alternatives: • Desert Sunlight Solar Farm Project • Silverado Power Solar Project • Desert Center 5050 Solar Project • Chuckwalla Race Track • Eagle Mountain Pumping Plant • Eagle Mountain Pumped Storage Project (not for Alternative E) • Eagle Mountain Wind Project Met Towers (not for Alternative E) For Alternatives B through E: • Palen Solar Power Project • Sol Orchard • Red Bluff Substation • I-10 • DPV1 • DPV2 • Blythe Energy Project Transmission Line

The foreseeable projects that would combine with the proposed solar field area to create cumulative effects in combination with any of the solar field alternatives and gen-tie line alternatives (Alternatives 4 through7 and B through E) include the Desert Sunlight Solar Farm Project, the Silverado Power Solar Project, Desert Center 50 Solar Project, Chuckwalla Race Track, and Eagle Mountain Pumping Plant, Eagle Mountain Pumped Storage Project (not for Alternative E) and Eagle Mountain Wind Project Met Towers (not for Alternative E). The gen-tie line alternatives (Alternatives B through E), would have the potential for cumulative effects in combination with Sol Orchard, Palen Solar Power Project, the Red Bluff Substation, I-10, and DPV1, DPV2, and the Blythe Energy Project Transmission Line. Table 3.10-1 in Section 3.10 (Mineral Resources in the project area) describes all known past and current mineral developments within five miles of the proposed solar facility site. This table supplements the existing cumulative conditions relevant to mineral resources.

The temporal scope of this cumulative analysis is considered the period within which the proposed project or an alternative is actively present or being decommissioned because during the life of the project, the solar facility site cannot be used to harvest other mining materials or energy sources.

Cumulative Effects Analysis

Most of the projects listed in Tables 4.1-1 and 4.1-2 and identified on Figure 4.1-1 in Appendix A have either undergone independent environmental review pursuant to NEPA and/or CEQA or will do so prior to approval. Even if environmental review has not been completed for the cumulative projects described, their effects were considered in the cumulative effects analyses in this EIS.

Effects related to access to known mineral resources are site-specific. A cumulative effect would only occur where the proposed project would affect access to mineral resources in the same way, within the same time, and at the same location. There are no active mineral resource operations within the boundaries of the DHSP. USGS identifies three mineral resource operations near the project (Table 3.10-1), but none of the mines are active. As previously described, mining claims on public lands under BLM jurisdiction are subject to BLM authority. The presence of the DHSP would not alter this jurisdiction or authority and would not permanently preclude access to any known mineral resource. Therefore, access to mineral resources would not be substantially affected by construction, operation, or decommissioning of the DHSP, and the project would not contribute to any adverse cumulative effects.

More generally, energy and mineral resources are common in the project study area. Sand, gravel, metals, and fuels required for the proposed project or alternatives and existing and reasonably foreseeable projects are widely available. Construction, operation, and decommissioning of the proposed project and existing and reasonable foreseeable projects would not substantially affect supply of these resources. While effects related to mineral and energy resource supply would be additive, the construction and operation of other existing and foreseeable projects would also not substantially affect supply of these resources; therefore, there would be no adverse cumulative effects.

Effects related to mineral and energy resources for Alternatives 5 through 7, and C through E would be essentially the same as described for the proposed project and with the contribution of existing and reasonable foreseeable projects would not represent substantial adverse cumulative effects. The No Action and No Project Alternatives (Alternatives 1, 2, 3, and A) would not contribute to any cumulative effects. Alternative B would not contribute to cumulative effects, as the cumulative scenario assumes concurrent construction of the Desert Sunlight approved gen-tie and Alternative B conductor stringing using the same crew at the same time, with no additional work required for Alternative B beyond what is required for the Desert Sunlight gen-tie.

4.10.16 CEQA Considerations

This section is included in this EIS for future use by CEQA Lead and Responsible agencies, and is not required under NEPA.

CEQA Significance Criteria

The significance criteria listed below are from the Environmental Checklist Form in Appendix G of the CEQA Guidelines; although the impact analysis presented in Sections 3.10.3 through 4.10.14 address both energy and mineral resources, the CEQA significance criteria are specific to mineral resources. These criteria are used to determine whether the proposed project or alternative would result in significant impacts to mineral resources under CEQA. The proposed project and alternatives would result in a significant impact to mineral resources if one of the following criteria are met.

MIN-1 Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.

MIN-2 Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.

CEQA Significance Determination

Alternatives 1, 2, 3, and A would not involve construction of the solar facility or gen-tie line. These alternatives would have no impacts on mineral or energy resources.

The proposed project and alternatives would require a source(s) of mineral resources during the construction and operation/maintenance phases, but development of the solar facility site would not interfere with any active mining operations, and would not constitute a substantial impact on regionally or locally important mineral resources. Development of the proposed project or an alternative does not alter BLM's jurisdiction or authority as related to mineral claims and explorations, and the potential for future explorations for mineral resources to occur on the solar facility site during the lifetime of the project would continue to be subject to BLM approval. However, use of the solar facility site for renewable energy development would have a temporary impact that would preclude use of that site for mineral resources that would persist for a significant duration, the expected 30-year life of the project. Additionally, temporary access restrictions to mineral resources could occur as a result of project-related traffic. Therefore, Significance Criterion MIN-1 is addressed in the following discussion.

Construction, operation and maintenance, and decommissioning of the proposed project or an alternative would not result in impacts associated with the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan (Significance Criterion MIN-2); therefore, Significance Criterion MIN-2 would not be met by the project or an alternative and is not addressed below.

Alternative 4

During construction and decommissioning of Alternative 4, traffic associated with the project would have the potential to affect mineral resources production in the project vicinity. However, there are no active mines within five miles of the project site at this time (MRDS 2011). Any potential access restrictions associated with the movement of vehicles and equipment to and from the site would be temporary.

During operation and maintenance of Alternative 4, access onto and across the solar facility site for the purposes of mineral exploration and extraction would be subject to the continued permitting authority of the BLM. Traffic associated with operation and maintenance of Alternative 4 would have a small potential to result in temporary access restrictions to mineral operations in the area; however, this would not result in impacts associated with the loss of availability of a known mineral resource that would be of value to the region and the residents of the state. Since BLM would still have jurisdiction over mineral resources on BLM land and any traffic-related effects on access to mineral resources would be temporary, the impacts of Alternative 4 related to Significance Criterion MIN-1 would be less than significant, and no mitigation is required.

Cumulative Impacts. Any impacts related to Significance Criterion MIN-1 would be minimal. Therefore, Alternative 4 would not represent a considerable contribution to any cumulative impacts to mineral resources.

Alternative 5

Impacts would be the same as for Alternative 4.

Alternative 6

Impacts would be the same as for Alternative 4.

Alternative 7

Impacts would be the same as for Alternative 4.

Alternative B

During construction and decommissioning of Alternative B, traffic associated with the gen-tie line alternative would have the potential to affect mineral resources production in the project vicinity. However, there are no active mines within five miles of the ROW at this time (MRDS 2011). Any potential access restrictions associated with the movement of vehicles and equipment to and from the site would be temporary.

During operation and maintenance of Alternative B, access across the ROW for the purposes of mineral exploration and extraction would be subject to the continued permitting authority of the BLM. Traffic associated with operation and maintenance of Alternative B would be negligible and would not result in impacts associated with the loss of availability of a known mineral resource that would be of value to the region and the residents of the state. Since BLM would still have jurisdiction over mineral resources on BLM land and any traffic-related effects on access to mineral resources would be temporary, the impacts of Alternative B related to Significance Criterion MIN-1 would be less than significant, and no mitigation is required.

Alternative C

Impacts would be essentially the same as for Alternative B.

Alternative D

Impacts would be essentially the same as for Alternative B.

Alternative E

Impacts would be essentially the same as for Alternative B.

Cumulative Impacts. Any impacts related to Significance Criterion MIN-1 would be minimal. Therefore, the project would not represent a considerable contribution to any cumulative impacts to mineral resources.

CEQA-Required Energy Conservation Analysis

In order to ensure that energy implications are considered in project decisions, CEQA requires that EIRs include a discussion of the potential energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful and unnecessary consumption of energy (see Public Resources Code section 21100(b)(3)). According to Appendix F of the State CEQA Guidelines, the goal of conserving energy implies the wise and efficient use of energy including: (1) decreasing overall per capita energy consumption; (2) decreasing reliance on fossil fuels; and (3) increasing reliance on renewable energy sources.

The DHSP itself would help achieve this goal because it would develop a renewable source of power, helping to offset the use of nonrenewable resources and contribute to an overall reduction of nonrenewable resources currently used to generate electricity. This is discussed in more detail below. In addition, Section 4.5 (Climate Change) describes effects on climate change/greenhouse gas emissions that would be caused by implementation of the DHSP, including a discussion on the effects of the projects on energy resources. Sections 4.2 (Air Quality) and 4.18 (Transportation) also discuss energy consuming equipment and vehicle trips required by the proposed project and alternatives.

In the absence of the DHSP, other power plants, both renewable and nonrenewable, may have to be constructed to serve the demand for electricity and to meet the California Renewables Portfolio Standard (RPS). Existing gas-fired plants may operate longer in order to meet the demand for energy. The impacts of these other facilities may be similar to those of the proposed solar facility because they require land areas comparable in size and environmental impacts comparable in degree to those required for the DHSP, whether for energy production or fuel extraction. Additionally, the environmental impacts of developing transmission capacity for such other power plants may be greater, especially where no transmission capacity exists or where energy production cannot be geographically concentrated to minimize the number of new transmission lines needed.

If the proposed solar facility were not built, California utilities would not receive the 150 MW contribution to the renewable state-mandated energy portfolio. SB X1-2 codifies the requirement to achieve 33 percent RPS statewide by the end of 2020, a key element of the 2008 AB 32 Scoping Plan (CARB 2008). To meet these requirements, the investor-owned utilities (IOUs) will have to almost triple their annual renewable energy procurement, from 33 terawatt-hours (TWh) in 2010 to 87 TWh by 2020. The project is expected to generate at least 300,000 MWh of renewable energy annually over its lifetime, a small but significant portion of the necessary new generation. In addition to contributing to renewable energy generation, specific measures and design features included by the DHSP Applicant in the project description that would conserve energy include:

- Requiring contractors to submit and implement a transportation plan describing how workers would travel to the project site and how to encourage carpooling and alternative forms of transportation (Applicant Measure AQ-4); and
- Commitment to recycling components from solar facility after decommissioning (Applicant Measure HAZ-10, Decommissioning Plan).

Specific requirements in project mitigation measures that would conserve energy and minimize inefficient and unnecessary consumption of energy include:

- Mitigation measure to control on-site emissions (MM AIR-2) and increase equipment efficiency (MM AIR-4);
- Mitigation measure requiring the project owner to recycle photovoltaic panels and other infrastructure (MM PHS-6); and
- Mitigation measure requiring the project owner develop a master Drought Water Management Program and a master Water Conservation Education Program (MM WAT-6).

Compliance with the applicant measures and mitigation measures identified in this EIS, would ensure that the proposed project and alternatives would not involve wasteful, inefficient, or unnecessary consumption of energy.

4.11 LANDS AND REALTY

4.11.1 Methodology for Analysis

The BLM Master Title Plats (MTPs) and Land and Mineral Legacy Rehost 2000 System of automated records (LR2000) were reviewed to obtain information related to pending and authorized uses on the lands potentially affected by the proposed project and alternatives. Effects assessment with respect to NEPA was based on known impacts relative to construction, operation, maintenance and decommissioning of right-of-way (ROW) and land-use permits of all types on BLM-administered land.

4.11.2 Applicant Measures

The following Applicant Measure (AM) has been incorporated as design features of the proposed project (and all action alternatives) and shall be implemented to reduce adverse impacts associated with the project. In some cases, mitigation measures further clarify or expand on AM reporting requirements, timing of implementation, or other details where appropriate. Where there is a conflict between provisions of the mitigation measures imposed and the following AM, the mitigation measures take precedence.

AM LU-1 **Notification.** Property owners within 300 feet of the project shall be notified of all major project construction milestones, such as start of project construction. Said property owners shall be provided with a detailed construction schedule at least 30 days before construction so that they are informed as to the time and location of disturbance. Updates shall be provided as necessary.

4.11.3 Alternative 1 – No Action (No Plan Amendment)

Under Alternative 1, the DHSP would not be approved by the BLM, and BLM would not amend the California Desert Conservation Area Plan 1980, as amended (CDCA Plan). As a result, no solar energy project would be constructed on the project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would remain in its existing condition in the near future, with no new structures or facilities constructed or operated on the site and no ground disturbance. As a result, effects from the project would not occur. A wide variety of uses such as mining, livestock grazing, recreation, energy, and the development of new utility facilities are allowed on the site under the BLM's land use designation of Class M, and it is possible that another applicant would use the site for an allowed land use in the future. Impacts from these projects would be dependent on the type of use proposed, and a separate NEPA process would be required.

4.11.4 Alternative 2 – No Project Alternative (with Plan Amendment to Find the Site Suitable for Solar Energy Development)

Under Alternative 2, the proposed DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site available for future solar energy development. As a result, the DHSP would not be constructed on the project site and the BLM would

manage the site consistent with the amended land use designation in the CDCA Land Use Plan. No effects from the DHSP would occur.

4.11.5 Alternative 3 – No Project Alternative (with Plan Amendment to Find the Site Unsuitable for Solar Energy Development)

Under Alternative 3, the proposed DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site unavailable for future solar energy development. As a result, the DHSP would not be constructed on the project site and the BLM would manage the site consistent with the amended land use designation in the CDCA Land Use Plan. No effects from the DHSP would occur.

4.11.6 Alternative 4 – Proposed Solar Project

Construction

Direct Effects

Existing and Planned Land Uses. Construction of Alternative 4 would develop 1,208 acres of undeveloped BLM-administered land, designated Multiple Use Class (MUC) M (Moderate Use) by the CDCA Plan. Per the CDCA Plan, solar energy generation facilities may be allowed on Class M land after NEPA requirements are met. The EIS addresses that requirement. Additionally, because DHSP project site is not currently identified as being associated with power generation, approval of Alternative 4 would require the CDCA Plan to be amended to identify the site as eligible for solar power generation. Therefore, Alternative 4 would not conflict with the CDCA Plan.

Two existing ROWs and one proposed ROW cross or would cross the southwestern portion of Alternative 4. Alternative 4 solar panels would avoid the existing and proposed transmission lines; however, the electrical collection systems would potentially cross the existing transmission ROWs. Because Alternative 4 would be subject to the previously existing ROW or other uses, Mitigation Measure LR-1 (Prior ROW Coordination Plan) is required to minimize impacts to prior ROW holders as required by the BLM. The BLM sent a letter to the Applicant on August 22, 2011 that listed the existing prior authorizations and segregations and advised the Applicant to coordinate the proposed solar energy development with the holders of prior existing rights. The BLM send letters to the Federal Energy Regulatory Commission and Southern California Edison in August 2011 notifying them of the proposed solar facility.

The Eagle Mountain Pumped Storage Project is planned to include a transmission line traversing the southwest parcel of the proposed DHSP (see Figure 2-3a in Appendix A). A Final EIS was published January 20, 2012. A Record of Decision has not yet been published. The Eagle Mountain Pumped Storage Project proposed transmission line would be a double circuit 500-kV transmission line that generally paralleled Eagle Mountain Road. The preferred alternative for the transmission line would parallel the existing 160-kV SCE transmission line for 10.5 miles. The electrical collection systems for Alternative 4 would potentially cross the preferred alternative. Because Alternative 4 would be subject to the previously existing ROW or other uses, Mitigation Measure LR-1 (Prior ROW Coordination Plan) is required to minimize impacts to prior ROW holders as required by the BLM. The Solar Energy Development Programmatic EIS is, similarly, in its draft form. As it does not describe any specific development in the vicinity of

Alternative 4, but is intended to plan for future solar development in the area, Alternative 4 would not conflict with any planned uses in the Solar Energy Development Programmatic EIS and would be consistent with planned uses described therein.

Habitat Conservation Areas. The NECO Plan serves as the Habitat Conservation Plan for the project study area. It designates the Chuckwalla DWMA and Critical Habitat Unit (CHU) and the Alligator Rock ACEC as habitat conservation areas. Alternative 4 would not overlap with and therefore would not affect these habitat conservation areas. The Palen-Ford WHMA overlaps 47 acres of Alternative 4 in its northeast corner (see Figure 3.11-1 in Appendix A). This portion of the WHMA is nearly linear, abutted directly to the north by the Desert Sunlight Solar Farm (DSSF) project. Construction of Alternative 4 would heavily affect the portion of the WHMA it overlaps. Because of its shape, small size, and low connectivity to the rest of the WHMA, affecting this area would have little effect on the management of the WHMA as a whole (see Section 4.4.7, Construction, Direct Effects: Wildlife Management Areas). Implementing Mitigation Measures to protect wildlife habitat and connectivity would reduce any potential land-use effects to the overall WHMA. Mitigation Measure VEG-6 (Provide Off-Site Compensation for Impacts to Vegetation and Habitat) and MM WIL-9 (Pro-Rated Contribution to the Desert Tortoise Population Connectivity Effectiveness Monitoring Plan) would offset Alternative 4 impacts to wildlife movement, including desert tortoise population connectivity, in the upper Chuckwalla Valley. MM VEG-6 incorporates the requirement that "the primary focus area for acquiring parcels to maintain/improve connectivity will be along the I-10 corridor between Desert Center and Cactus City with a priority on parcels that connect conserved lands on either side of the I-10 through large culverts or bridges; the habitat compensation ratio for mitigation lands along the I-10 corridor shall be 1:1 for each acre of total long-term and permanent disturbance." MM WIL-9 would require the project owner to contribute on a pro-rated basis to funding the Desert Tortoise Population Connectivity Effectiveness Monitoring Plan conservation measure described in the Desert Sunlight Biological Opinion.

Alternative 4 would be located within the Riverside East Solar Energy Zone (SEZ) in the Solar Energy Development Programmatic EIS. The Solar Energy Development Programmatic EIS does not describe any specific development in the vicinity of Alternative 4 but is intended to plan for future solar development in the area. Alternative 4 would not conflict with any planned uses in the Solar Energy Development Programmatic EIS and would be consistent with planned uses described therein.

Agriculture. Alternative 4 would not affect any agricultural lands. The nearest agricultural lands are approximately 1,000 feet west of Alternative 4.

Indirect Effects

Construction effects associated with Alternative 4 would not result in substantial changes to population growth or density that would affect lands and realty or agriculture. Indirect effects associated with ecosystems, such as effects to the functionality of land outside the project area in the WHMA or DWMA are addressed in Section 4.3 (Biological Resources – Vegetation) and Section 4.4 (Biological Resources – Wildlife).

Operation and Maintenance

The direct and indirect effects to land and realty resources resulting from the operation and maintenance of Alternative 4 would not be any different from the impacts related to the construction of the project, but would be somewhat less as the operation and maintenance would not impacts some land affected during construction, such as staging areas, resulting in a reduced footprint. With Alternative 4, approximately 1,208 acres of land managed by the BLM would be unavailable for other uses for approximately 30 years. No conflicts with the CDCA Plan, NECO Plan, or known existing or proposed land uses would occur.

A Federal Energy Regulation Commission (FERC) withdrawal area for the proposed Eagle Mountain Pumped Storage Project (EMPSP, "Power Project P-13123") overlaps the southwestern parcel of Alternative 4. As proposed, none of the proposed DHSP solar modules would overlap with this withdrawal area, though gravel access roads could potentially overlap. Mitigation Measure LR-2 would ensure that no incompatible project infrastructure would impact existing FERC exclusion or public land withdrawal areas, and that compatible infrastructure, such as access roads, would only be allowed in the FERC withdrawal areas if they do not preclude the licensed use or if the licensee is reimbursed for any costs related to the DHSP (see Appendix P for full text of BLM letter to FERC).

Indirect effects associated with ecosystems, such as effects to the functionality of land outside the project study area in the WHMA or DWMA are addressed in Section 4.3 (Biological Resources – Vegetation) and Section 4.4 (Biological Resources – Wildlife).

Decommissioning

Direct Effects

Existing and Planned Land Uses. Decommissioning of Alternative 4 would temporarily affect a footprint similar to that of construction. When decommissioning is complete, the area would be restored to its existing BLM multiple use status, making the land available for other uses. Decommissioning would require coordination similar to that performed during construction where Alternative 4 overlapped existing uses (including roads and transmission lines). Once decommissioning is complete, Alternative 4 would no longer overlap these uses. No conflicts with the CDCA Plan, NECO Plan or known existing or proposed land uses would occur.

Applicable Land Use Plans, Policies, or Regulations. Land use plans, policies, or regulations may have changed by the time Alternative 4 would be decommissioned. A decommissioning plan would be created to ensure that decommissioning was conducted in accordance with then-current land use plans, policies, or regulations.

Habitat Conservation Areas. Decommissioning Alternative 4 would not affect any habitat conservation areas as the site does not currently overlap habitat conservation areas, nor would any be designated at the site while it would be in use as a solar farm. Decommissioning would create effects similar to those of construction in the WHMA, and mitigation measures for biological resources would reduce these effects. Mitigation Measure VEG-6 (Provide Off-Site Compensation for Impacts to Vegetation and Habitat) and MM WIL-9 (Pro-Rated Contribution to the Desert Tortoise Population Connectivity Effectiveness Monitoring Plan) would offset project impacts to wildlife movement, including desert tortoise population connectivity, in the upper Chuckwalla Valley. MM VEG-6 incorporates the requirement that "The primary focus area for

acquiring parcels to maintain/improve connectivity will be along the I-10 corridor between Desert Center and Cactus City with a priority on parcels that connect conserved lands on either side of the I-10 through large culverts or bridges; the habitat compensation ratio for mitigation lands along the I-10 corridor shall be 1:1 for each acre of total long-term and permanent disturbance." MM WIL-9 would require the project owner to contribute on a pro-rated basis to funding the Desert Tortoise Population Connectivity Effectiveness Monitoring Plan conservation measure described in the Desert Sunlight Biological Opinion.

Agriculture. Decommissioning Alternative 4 would not affect any agricultural lands as the site does not currently overlap agricultural lands, nor would any agricultural lands be designated on the site while it was being used as a solar farm.

Indirect Effects

Decommissioning of Alternative 4 would not result in substantial changes to population growth or density that would affect lands and realty or agriculture. Indirect effects associated with ecosystems, such as effects to the functionality of land outside the solar facility area in the WHMA or DWMA are addressed in Section 4.3 (Biological Resources – Vegetation) and Section 4.4 (Biological Resources – Wildlife).

Mitigation Measures

The following mitigation measures would be implemented to reduce effects to ROW holders to the maximum extent feasible.

MM LR -1 **Prior ROW Coordination.** The project owner shall coordinate with any prior ROW holders, document the effect the new use would have on existing holders, and resolve any incompatibilities to the existing holders at the project owner's expense. The project owner shall bear all costs for relocating, modifying, or flagging any facilities such as power poles, conductors, or pipelines that might be necessary to accommodate the new use.

MM LR-2 **FERC Withdrawal Compatibility**. The project owner shall construct, operate, and maintain all facilities located within the Federal Energy Regulatory Commission (FERC) withdrawal area so as not to interfere with or preclude use of the withdrawn public lands for the EMPSP (Power Project P-13123). The DHSP project owner shall be responsible for any costs necessary to maintain or modify any DHSP facilities to accommodate use of public land under Power Project P-13123. If Power Project P-13123 is licensed by FERC, the project owner shall also be responsible for reimbursing the licensee for all reasonable costs incurred by the licensee as a result of the project owner's use of withdrawn public land. "Project components" include fencing, solar modules, overhead or underground transmission lines, gravel or paved access roads, or other project facilities that have the potential to interfere with the licensed use on the withdrawn land.

Residual Impacts and Unavoidable Adverse Effects

The construction, operation and maintenance, and decommissioning of the project would not result in any unavoidable adverse effects.

4.11.7 Alternative 5 – Solar Project Excluding WHMA

Alternative 5 would be constructed within the same project boundaries as Alternative 4, except that it would exclude the portion of the site which is within the Palen-Ford Wildlife Habitat Management Area (WHMA), as shown on Figure 2-9, in Appendix A.

Effects of construction, operation and maintenance and decommissioning under Alternative 5 would substantially the same as those under Alternative 4. The notable exception is that Alternative 5 would avoid direct effects to the WHMA as those lands would be excluded from the Alternative 5 site, and therefore measures would not be required to mitigate effects. No conflicts with the CDCA Plan or NECO Plan would occur. Because Alternative 5 would be subject to the same previously existing ROW or other uses as Alternative 4, Mitigation Measure LR-1 (Prior ROW Coordination Plan) is required to minimize impacts to prior ROW holders as required by the BLM.

Decommissioning

The effects resulting from decommissioning of Alternative 5 would be the same as those discussed under Alternative 4.

Mitigation Measures

The measure identified for Alternative 4 would also be implemented under Alternative 5.

Residual Impacts and Unavoidable Adverse Effects

The construction, operation and maintenance, and decommissioning of the project would not result in any unavoidable adverse effects.

4.11.8 Alternative 6 – Reduced Footprint Solar Project

Alternative 6 would exclude the 155-acre southern parcel of the solar facility site and a small portion of the northern parcel that contains sensitive plant species, crucifixion thorn, as shown on Figure 2-10, Alternative 6: Reduced Footprint Solar Project, in Appendix A.

Because the land removed from development consideration under Alternative 6 is all BLM land under the same designation as the rest of the solar facility, effects of the construction, operation and maintenance, and decommissioning of Alternative 6 on land use would not differ from those described with respect to Alternative 4; however, the magnitude would be reduced commensurate with the reduced footprint.

No conflicts with the CDCA Plan, NECO Plan, or known existing or proposed land uses would occur. Alternative 6 would not develop the southwestern portion of the project which is encumbered by previously existing ROW.

Decommissioning

The effects resulting from decommissioning of Alternative 6 would be the same as those discussed under Alternative 4.

Mitigation Measures

Construction, operation and maintenance, and decommissioning of the project would not result in substantial adverse direct or indirect effects to lands and realty such that mitigation measures are required. No mitigation measures are proposed.

Residual Impacts and Unavoidable Adverse Effects

The construction, operation and maintenance, and decommissioning of Alternative 6 would not result in any unavoidable adverse effects.

4.11.9 Alternative 7 – High-Profile Reduced Footprint Solar Project

Alternative 7 would be constructed within the same project boundaries as Alternative 6. Alternative 7 would encompass an estimated 1,044 acres and would be an estimated 150 MW nominal capacity project. Project details are the same as for Alternative 4, with the only exception being the overall height of the panels for Alternative 7. Alternative 7 would use high-profile single-axis tracking panels that would have a total height of 15 feet.

Because the land removed from development consideration under Alternative 7 is all BLM land under the same designation as the rest of the solar facility, effects of the construction and decommissioning of Alternative 7 on land use would not differ from those described with respect to Alternative 4; however, the magnitude would be reduced commensurate with the reduced footprint.

No conflicts with the CDCA Plan, NECO Plan, or known existing or proposed land uses would occur. Alternative 7 would not develop the southwestern portion of the project which is encumbered by previously existing ROW.

Operation and Maintenance

Higher panels used during operation of Alternative 7 have the potential to affect the DSSF immediately north of the DHSP by shading the DSSF's shorter panels. Implementation of Mitigation Measure LR-3 would eliminate this impact by ensuring that no shading of DSSF solar panels would occur.

Decommissioning

The effects resulting from decommissioning of Alternative 7 would be the same as those discussed under Alternative 4.

Mitigation Measures

The following mitigation measures would be implemented to reduce effects to ROW holders to the maximum extent feasible.

MM LR -3 **Eliminate DSSF Panel Shading**. If a higher panel alternative is adopted, the project owner shall ensure that the project layout does not result in shading of neighboring solar panels in the Desert Sunlight Solar Farm (DSSF), the existing ROW holder immediately north of the proposed solar facility site. The burden of proof shall rest with the project owner (of the Desert Harvest Solar Project [DHSP]) to demonstrate that no shading would occur on DSSF panels through

commissioning of an engineering study carried out by a qualified professional. The study shall be submitted to DSSF and BLM for review prior to BLM's issuance of a notice to proceed for the DHSP. DSSF shall be given 30 days to respond, and BLM has the final authority to approve or reject the findings of the study. If BLM determines that adjacent shading would occur, a notice to proceed for the DHSP will be withheld until a redesign of the DHSP shows no shading of adjacent DSSF panels, or until a suitable financial agreement is reached between the DSSF and the DHSP.

Residual Impacts and Unavoidable Adverse Effects

With implementation of MM LR-3, the construction, operation and maintenance, and decommissioning of Alternative 7 would not result in any unavoidable adverse effects.

4.11.10 Alternative A – No Gen-Tie

Under Alternative A, no gen-tie line would be constructed or operated as part of the DHSP. Therefore, no effects related to construction, operations and maintenance, or decommissioning would occur.

Mitigation Measures

No mitigation measures are required for Alternative A.

Residual Impacts and Unavoidable Adverse Effects

No effects would result from the implementation of Alternative A.

4.11.11 Alternative B – Proposed Gen-Tie (Shared Towers)

Although Alternative B would share transmission infrastructure with the approved Desert Sunlight Solar Farm (DSSF) project, the baseline for environmental effects is the existing condition of the site in September, 2011. At that time, construction of the DSSF transmission infrastructure had not yet commenced, so analysis of Alternative B includes the full construction effects of this shared infrastructure.

Construction

Direct Effects

Construction of Alternative B would permanently disturb 92 acres within a ROW area of approximately 256 acres of primarily undeveloped multiple use BLM-administered land as a transmission line corridor. Alternative B would overlap the following existing authorized uses described in Table 3.11-2:

- Municipal Water District (MWD) ROW for canals and ditches;
- Two Southern California Edison (SCE) transmission lines;
- FERC Withdrawal for transmission and water supply;
- Interstate (I-) 10, which is under the jurisdiction of Caltrans;
- Underground telephone cable owned by Sprint;

- State Route (SR-)177, which is under the jurisdiction of Caltrans;
- Kaiser Road, which is under the jurisdiction of Riverside County;
- Southern California Gas Company water pipeline and well; and
- A privately-owned access road.

Adverse effects from road crossings would be temporary and limited to short-term traffic disturbance and access limitations during wire stringing. Towers would be sited to provide access and required buffers for the MWD ROW, the telephone cable, and the water pipeline and well, thus avoiding direct impacts to these existing land uses. The transmission lines could require minor design or siting modification, but all modifications would be done in accordance with existing laws and regulations by SCE and under the oversight of the California Public Utilities Commission and the California Independent System Operator. Adverse effects to existing land uses would be minimal.

Applicable Land Use Plans, Policies, or Regulations. The majority of Alternative B would be on BLM-administered land, approximately half of which is designated as Multiple Use Class M (Moderate Use) by the CDCA Plan. The other half of Alternative B would run along the west side of Kaiser Road, where it would be on land designated BLM Multiple Use Class L (Limited Use) by the CDCA Plan. Electrical generation, transmission, and distribution facilities may be allowed on both Moderate and Limited Use land within designated utility corridors after NEPA requirements are met and a plan amendment is approved. No conflicts with the CDCA Plan would occur.

The portion of Alternative B southeast of SR-177 (approximately 5 miles) would be within designated utility corridor "K," but the remainder of the DHSP gen-tie line route would cross BLM lands outside of utility corridor "K." As explained in Chapter 2, the CDCA Plan would be amended to authorize those portions of the Alternative B gen-tie line route across BLM-managed lands outside of utility corridor "K." A large portion of Alternative B would be located within or adjacent to the existing Riverside County ROW for Kaiser Road where the underlying management is BLM, except for one parcel of land owned by MWD and one Riverside County fee-owned parcel. According to Riverside County Code Section 17.284.020 excavation in, construction in, and installation of improvements or structures in the Riverside County ROW is permitted only upon the issuance of an encroachment permit. The Applicant will apply to the County of Riverside Transportation Department for an encroachment permit for Alternative B in accordance with Chapter 17.284 of the Riverside County Code. The Applicant would also enter into a land license agreement, lease, or permanent easement with MWD for the portions of land owned in fee by MWD, and would rely on this EIS to satisfy the CEQA obligations of MWD.

An 845-foot (0.2-mile) portion of Alternative B would traverse the FERC withdrawal area west of Kaiser Road. Only 145 feet of this overlap would occur on public lands owned by the BLM and withdrawn under the FPA; the remainder of the overlap would occur on private land owned by the MWD. Implementation of MM LR-2 would ensure that no impacts to the withdrawal holder under the FPA would occur.

A 0.6-mile portion of Alternative B would traverse one private parcel designated by the County's General Plan as Open-Space Rural (OS-RUR) and zoned Natural Assets (N-A). The OS-RUR designation allows limited development. Alternative B would comply with the development policies of the OS-RUR designation because it would be constructed with building materials such as

steel poles that rust to blend into the natural landscape, and would generally track existing power lines and power line ROW. Utility substations are permitted in the N-A zone subject to the issuance of a plot plan. The County's Code also permits public utility uses within any zoning classification subject to the issuance of a public use permit.

Alternative B would be located within the Riverside East SEZ of the Solar Energy Development Programmatic EIS. As described above for Alternative 4, the Solar Energy Development Programmatic EIS does not describe any specific development in the vicinity of Alternative B, but is intended to plan for future solar development in the area. Therefore, Alternative B would not conflict with any planned uses in the Solar Energy Development Programmatic EIS and would be consistent with planned uses described therein.

Habitat Conservation Areas. Alternative B would traverse the Chuckwalla DWMA and CHU to reach the Red Bluff Substation, which would result in temporary and permanent land disturbance. The NECO Plan allows for development in 1 percent of the DWMA. The BLM-administered portion of the DWMA is approximately 465,287 acres in size; therefore, the development of Alternative B would represent a negligible percentage (0.008 percent) of the allowable development within the DWMA. The exact acreage disturbed and a discussion of effects to habitat and wildlife are described in Sections 4.3 (Biological Resources – Vegetation) and 4.4 (Biological Resources – Wildlife).

As described above for Alternative 4, compliance with the CDFG's interim requirements is addressed in Sections 4.3 (Biological Resources – Vegetation) and 4.4 (Biological Resources – Wildlife) along with mitigation required to ensure compliance.

Agriculture. Alternative B would not affect any agricultural lands. The nearest agricultural lands are approximately 1,000 feet west of Alternative B.

Indirect Effects

Construction effects associated with Alternative B would not result in substantial changes to population growth or density that would affect lands and realty or agriculture. Indirect effects associated with ecosystems, such as effects to the functionality of land outside the project area in the DWMA are addressed in Section 4.3 (Biological Resources – Vegetation) and Section 4.4 (Biological Resources – Wildlife).

Operation and Maintenance

The direct and indirect effects to land and realty resources resulting from the operation and maintenance of Alternative B would be reduced compared to those discussed under construction of Alternative B. Some land that would be affected by construction, such as staging areas, would not be affected during operation and maintenance, resulting in a reduced footprint. Indirect effects associated with ecosystems, such as effects to the functionality of land outside the project area in the DWMA are addressed in Section 4.3 (Biological Resources – Vegetation) and Section 4.4 (Biological Resources – Wildlife).

Decommissioning

Direct Effects

Existing and Planned Land Uses. Decommissioning of Alternative B would affect a footprint similar to that of construction. When decommissioning is complete, 92 acres of land would be restored and would be available for other uses. Decommissioning would require coordination similar to that performed during construction where Alternative B overlapped existing uses (including roads and transmission lines). Once decommissioning is complete, Alternative B would no longer overlap these uses.

Habitat Conservation Areas. Decommissioning Alternative B would initially result in additional disturbance to the Chuckwalla DWMA and CHU where Alternative B overlaps these habitat conservation areas. The NECO Plan allows for development in 1 percent of the DWMA. The amount of land disturbed would be much less than the 1 percent allowed by the NECO Plan and the disturbance would be limited to the duration of decommissioning activities. When decommissioning is complete, these lands would be restored and could once again be used as a habitat conservation area.

The other effects resulting from decommissioning Alternative B (i.e., effects to land use plans, policies or regulations, and agricultural lands) would be the same as those described under decommissioning of Alternative 4.

Indirect Effects

Decommissioning of Alternative B would not result in substantial changes to population growth or density that would affect lands and realty or agriculture. Indirect effects associated with ecosystems, such as effects to the functionality of land outside the project area in the DWMA are addressed in Section 4.3 (Biological Resources – Vegetation) and Section 4.4 (Biological Resources – Wildlife).

Mitigation Measures

Construction, operation and maintenance, and decommissioning of the project would not result in substantial adverse direct or indirect effects to lands and realty such that mitigation measures are required. No mitigation measures are proposed.

Residual Impacts and Unavoidable Adverse Effects

The construction, operation and maintenance, and decommissioning of the project would not result in any unavoidable adverse effects.

4.11.12 Alternative C – Separate Transmission Towers within Same ROW

Alternative C would be built in the same ROW and follow the same path as Alternative B, but would construct new transmission infrastructure rather than sharing the DSSF infrastructure. The Alternative C ROW would extend west of the approved DSSF gen-tie ROW, 60 feet into the adjacent Chuckwalla DWMA to accommodate intermittent wind sway of overhanging conductors. No planned temporary or permanent ground disturbance would occur within the DWMA; ground disturbance in the DWMA would occur only during emergency maintenance.

Because the baseline for the proposed project does not include any of the proposed construction for the DSSF gen-tie line, the direct and indirect effects of constructing, operating and maintaining, and decommissioning Alternative C would be substantially similar to effects described under Alternative B. However, Alternative C would cross the DSSF transmission line, an existing encumbrance on BLM land. Because Alternative C would be subject to the previously existing ROW, Mitigation Measure LR-1 (Prior ROW Coordination Plan) is required to minimize impacts to prior ROW holders as required by the BLM.

Alternative C would extend into the Chuckwalla DWMA. Although no temporary or permanent ground disturbance is planned in the DWMA, ground disturbance would potentially occur during emergency maintenance. Mitigation Measure VEG-6 would reduce any adverse effects to the DWMA, see Section 4.17, Special Designations.

No conflicts with the CDCA Plan or NECO Plan would occur. Alternative C would cross the existing Desert Sunlight ROW. Because Alternative 4 would be subject to the previously existing ROW or other uses, Mitigation Measure LR-1 (Prior ROW Coordination Plan) is required to minimize impacts to prior ROW holders as required by the BLM. No conflicts with BLM or Riverside County land use requirements would occur.

Mitigation Measures

The measure identified for Alternative 4 would also be implemented under Alternative C.

Residual Impacts and Unavoidable Adverse Effects

The construction, operation and maintenance, and decommissioning of Alternative C would not result in any unavoidable adverse effects.

4.11.13 Alternative D – Cross-Valley Alignment

Construction

Direct Effects

Existing and Planned Land Uses. Construction of Alternative D would develop 86 acres of generally undeveloped multiple use BLM-administered land as a transmission line ROW. Alternative D would cross the following existing authorized uses described in Table 3.11-2:

- MWD ROW for canals and ditches;
- FERC Withdrawal for transmission and water supply;
- One existing 161-kV SCE transmission line;
- I-10, which is under the jurisdiction of Caltrans; and
- Underground telephone cable owned by Sprint.

In addition, Alternative D would cross the following existing authorized uses described in Table 3.11-2:

- SR-177, which is under the jurisdiction of Caltrans.

Effects from road crossings would be temporary and limited to short-term traffic disturbance during wire stringing. Towers would be sited to maintain access and required buffers for the

MWD ROW and the underground telephone cable; however, temporary disturbance could occur. The transmission lines could require minor design or siting modification.

The Eagle Mountain Pumped Storage Project's staff alternative double-circuit 500 kV transmission line would follow the same SCE transmission ROW as Alternative D. The Eagle Mountain Pumped Storage Project requested use of a 200-foot ROW for the transmission line (SWRCB 2010). The existing 161-kV SCE transmission line is located in a 100-foot ROW, with an additional 20-foot ROW immediately adjacent to this ROW (BLM 2011). Because Alternative D would be subject to the previously existing ROW or other uses, Mitigation Measures LR-1 (Prior ROW Coordination Plan) and LR-2 (FERC ROW Compatibility) are required to minimize impacts to prior ROW holders as required by the BLM.

Applicable Land Use Plans, Policies, or Regulations. Construction of Alternative D would also cross 5.1 miles of private land. Approximately 1.5 miles of the private land is zoned A-1-20, Agricultural. Public utility facilities are permitted in the A-1 zone subject to the approval of a permit and plot plan by Riverside County (Riverside County 2009). The remainder is zoned W-2-10, Controlled Development Zone. Transmission lines are allowed in W-2-10 zones when approved by Riverside County. Structure heights within the A-1 and W-2-10 zones may exceed 50 feet subject to the issuance of a variance by Riverside County (Riverside County 2009). With these approvals, conflicts with Riverside County land use requirements would not occur.

The remainder of Alternative D would be on BLM-administered land. The majority of the land is designated as Multiple Use Class M (Moderate Use) by the CDCA Plan. A short section south of I-10 and north of the Red Bluff Substation would be on land designated Multiple Use Class L (Limited Use). Electrical transmission and distribution facilities may be allowed on both Moderate and Limited Use land within designated utility corridors after NEPA requirements are met and a plan amendment is approved.

The majority of Alternative D, approximately 3.9 miles, would be on BLM-administered land that is not within a designated utility corridor. Approximately 1 mile of Alternative D north of Red Bluff Substation would be within designated utility corridor K. As explained in Chapter 2, the CDCA Plan would be amended to authorize those portions of the Alternative D gen-tie line route across BLM-managed lands outside of utility corridor "K." Conflicts with the CDCA Plan would thus not occur.

Alternative D would be located within the Riverside East SEZ of the Solar Energy Development Programmatic EIS. As described above for Alternative 4, the Solar Energy Development Programmatic EIS does not describe any specific development in the vicinity of Alternative D but is intended to plan for future solar development in the area, Alternative D would not conflict with any planned uses in the Solar Energy Development Programmatic EIS and would be consistent with planned uses described therein.

Habitat Conservation Areas. The southern tip of Alternative D would traverse the Chuckwalla DWMA and CHU, which would result in temporary and permanent land disturbance. The total acreage disturbed represents less than 0.0001 percent, significantly less than the 1 percent that may be developed according to the NECO Plan. Temporary and permanent effects to habitat and desert wildlife would occur as described in Sections 4.3 (Biological Resources – Wildlife) and 4.4 (Biological Resources – Vegetation).

Agriculture. Alternative D would cross approximately 1.5 miles of private agricultural land located within Riverside County. The County of Riverside General Plan (2003) has not identified any area within the Desert Center Planning Area, which includes the Alternative D ROW, as Prime Farmland soils. However, Riverside County has identified soils in one component of the Alternative D ROW where it crosses Rice Road, as Williamson Act Non-Prime Agricultural Land (California Department of Conservation, Division of Land Resources Protection 2007). Most non-prime lands are in agricultural uses, such as grazing or non-irrigated crops. Non-prime lands may also include other open space uses that are compatible with agriculture and consistent with local general plans (California Department of Conservation, Division of Land Resources Protection 2007). Although soils associated with the Alternative D ROW have not been surveyed by the NRCS, the geotechnical survey of the site suggests that the soils found on the Alternative B area were essentially uniform in nature and primarily sandy in texture, similar to the soils found in the agriculture lands adjacent to Rice Road (BLM 2011).

The construction of Alternative D would not result in a substantial adverse effect because transmission lines are generally consistent with agricultural uses. While a portion of the Alternative D ROW is enrolled in a Williamson Act contract, open space uses consistent with local plans and regulations, such as transmission lines, would not result in a substantial adverse effect. The agricultural preserves are zoned A-1-20, which allows public utilities subject to permit and approval by the County. Soils associated with the preserves have not been identified as Prime Farmland. No adverse effect to Prime Farmland soils would occur from the construction of Alternative D.

Indirect Effects

Construction effects associated with Alternative D would not result in substantial changes to population growth or density that would affect lands and realty or agriculture. Indirect effects associated with ecosystems, such as impacts to the functionality of land outside the project area in the WHMA or DWMA are addressed in Section 4.3 (Biological Resources – Vegetation) and Section 4.4 (Biological Resources – Wildlife).

Operation and Maintenance

The direct and indirect effects to land and realty resources resulting from the operation and maintenance of Alternative D would not be any different from the impacts related to the construction of Alternative D. Some land that would be affected during construction, such as staging areas, would not be affected during operation and maintenance, resulting in a reduced footprint. Indirect effects associated with ecosystems, such as effects to the functionality of land outside the project area in the WHMA or DWMA are addressed in Section 4.3 (Biological Resources – Vegetation) and Section 4.4 (Biological Resources – Wildlife).

Decommissioning

Direct Effects

Existing and Planned Land Uses. Decommissioning would affect a footprint similar to that during construction. When complete, decommissioning of Alternative D would result in restoration of 86 acres of land, making the land available for other uses. Decommissioning would require coordination similar to that performed during construction where Alternative D over-

lapped existing uses (including agricultural land, roads, and transmission lines). Once decommissioning was completed, Alternative D would no longer overlap these uses.

Applicable Land Use Plans, Policies, or Regulations. Land use plans, policies, or regulations may have changed by the time Alternative D would be decommissioned. A decommissioning plan would be created to ensure that decommissioning was conducted in accordance with then-current land use plans, policies, or regulations.

Habitat Conservation Areas. Decommissioning Alternative D would initially result in additional disturbance to the Chuckwalla DWMA and CHU where Alternative D overlaps these habitat conservation areas. However, the amount of land disturbed would be much less than the 1 percent allowed by the NECO Plan, and the disturbance would be limited to the duration of decommissioning activities. When decommissioning was complete, these lands would be restored and could once again be used as a habitat conservation area.

Agriculture. Decommissioning Alternative D would result in effects similar to construction on Alternative D; however, once decommissioning was completed, Alternative D would no longer overlap agricultural land.

Indirect Effects

Decommissioning of Alternative D would not result in substantial changes to population growth or density that would affect lands and realty or agriculture. Indirect effects associated with ecosystems, such as effects to the functionality of land outside the project area in the WHMA or DWMA are addressed in Section 4.3 (Biological Resources – Vegetation) and Section 4.4 (Biological Resources – Wildlife).

Mitigation Measures

The measure identified for Alternative 4 would also be implemented under Alternative D.

Residual Impacts and Unavoidable Adverse Effects

The construction, operation and maintenance, and decommissioning of Alternative D would not result in any unavoidable adverse effects.

4.11.14 Alternative E – New Cross-Valley Alignment

Construction

Direct Effects

Existing and Planned Land Uses. Construction of Alternative E would develop 85 acres of generally undeveloped multiple use BLM-administered land as a transmission line ROW. Alternative E would cross the following existing authorized uses described in Table 3.11-2:

- MWD ROW for canals and ditches;
- One SCE transmission lines;
- I-10, which is under the jurisdiction of Caltrans; and
- Underground telephone cable owned by Sprint.

In addition, Alternative E would overlap the following existing authorized uses described in Table 3.11-2:

- SR-177, which is under the jurisdiction of Caltrans.

Effects from road crossings would be temporary and limited to short-term traffic disturbance during wire stringing. Towers would be sited to avoid permanent effects to the MWD ROW and the underground telephone cable; however, temporary disturbance could occur. Because Alternative E would be subject to the previously existing ROW or other uses, Mitigation Measure LR-1 (Prior ROW Coordination Plan) is required to minimize impacts to prior ROW holders as required by the BLM.

Applicable Land Use Plans, Policies, or Regulations. Construction of Alternative E would also cross 4.25 miles of private land zoned W-2-10, Controlled Development Zone. Transmission lines are allowed in W-2-10 zones when approved by Riverside County. Structure heights within W-2-10 zones may exceed 50 feet subject to the issuance of a variance by Riverside County (Riverside County 2009). With these approvals, conflicts with Riverside County land use requirements would not occur.

The remainder of Alternative E would be on BLM-administered land. The majority of the land is designated as Multiple Use Class M (Moderate Use) by the CDCA Plan. A short section east of SR 177 and south of I-10 and north of the Red Bluff Substation would be on land designated Multiple Use Class L (Limited Use). Electrical transmission and distribution facilities may be allowed on both Moderate and Limited Use land within designated utility corridors after NEPA requirements are met and a plan amendment is approved. Construction of the portion of Alternative E that is on BLM-administered land but not within a utility corridor (5.4 miles) would require a CDCA Plan amendment.

The majority of Alternative E would not be within a designated utility corridor. Approximately 1 mile of Alternative E north of Red Bluff Substation would be within designated utility corridor K. As explained in Chapter 2, the CDCA Plan would be amended to authorize those portions of the Alternative E gen-tie line route across BLM-managed lands outside of utility corridor "K."

Alternative E would be located within the Riverside East SEZ of the Solar Energy Development Programmatic EIS. As described above for Alternative 4, the Solar Energy Development Programmatic EIS does not describe any specific development in the vicinity of Alternative E but is intended to plan for future solar development in the area. Therefore, Alternative E would not conflict with any planned uses in the Solar Energy Development Programmatic EIS and would be consistent with planned uses described therein.

Habitat Conservation Areas. The southern tip of Alternative E would traverse the Chuckwalla DWMA and CHU, which would result in temporary and permanent land disturbance. As with Alternative B, the total acreage disturbed represents less than 0.0001 percent, significantly less than the 1 percent that may be developed according to the NECO Plan. Temporary and permanent effects to habitat and desert wildlife would occur as described in Sections 4.3 (Biological Resources – Vegetation) and Section 4.4 (Biological Resources – Wildlife).

Indirect Effects

Construction effects associated with Alternative E would not result in substantial changes to population growth or density that would affect lands and realty or agriculture. Indirect effects associated with ecosystems, such as effects to the functionality of land outside the project area in the WHMA or DWMA are addressed in Section 4.3 (Biological Resources – Vegetation) and Section 4.4 (Biological Resources – Wildlife).

Operation and Maintenance

The direct and indirect effects to land and realty resources resulting from the operation and maintenance of Alternative E would not be any different from the impacts related to the construction of Alternative E. Some lands that would be affected during construction, such as staging areas, would not be affected during operation and maintenance, resulting in a reduced footprint.

Indirect effects associated with ecosystems, such as effects to the functionality of land outside the project area in the WHMA or DWMA are addressed in Section 4.3 (Biological Resources – Vegetation) and Section 4.4 (Biological Resources – Wildlife).

Decommissioning

Direct Effects

Existing and Planned Land Uses. Decommissioning would affect a footprint similar to that during construction. When complete, decommissioning of Alternative E would result in restoration of 85 acres of land, making the land available for other uses. Decommissioning would require coordination similar to that performed during construction where Alternative E overlapped existing uses (including agricultural land, roads, and transmission lines). Once decommissioning is completed, Alternative E would no longer overlap these uses.

Applicable Land Use Plans, Policies, or Regulations. Land use plans, policies, or regulations may have changed by the time Alternative E would be decommissioned. A decommissioning plan would be created to ensure that decommissioning was conducted in accordance with then-current land use plans, policies, or regulations.

Habitat Conservation Areas. Decommissioning Alternative E would initially result in additional disturbance to the Chuckwalla DWMA and CHU where Alternative E overlaps these habitat conservation areas. However, the amount of land disturbed would be much less than the 1 percent allowed by the NECO Plan, and the disturbance would be limited to the duration of decommissioning activities. When decommissioning was complete, these lands would be restored and could once again be used as a habitat conservation area.

Agriculture. Decommissioning Alternative E would result in effects similar to construction on Alternative E; however, once decommissioning was completed, Alternative E would no longer overlap agricultural land.

Indirect Effects

Decommissioning of Alternative E would not result in substantial changes to population growth or density that would affect lands and realty or agriculture. Indirect effects associated with ecosystems, such as effects to the functionality of land outside the project area in the WHMA or

DWMA are addressed in Section 4.3 (Biological Resources – Vegetation) and Section 4.4 (Biological Resources – Wildlife).

Mitigation Measures

The measure identified for Alternative 4 would also be implemented under Alternative E.

Residual Impacts and Unavoidable Adverse Effects

The construction, operation and maintenance, and decommissioning of Alternative E would not result in any unavoidable adverse effects.

4.11.15 Cumulative Effects

Geographic Scope

The geographic extent for the consideration of cumulative effects to lands and realty and agricultural resources is in eastern Riverside County and includes the projects described in Section 4.1.4 (Cumulative Scenario) Tables 4.1-1 and 4.1-2. An analysis of potential cumulative effects to land use and agricultural resources needs to cover a large area because current applications for development of renewable energy projects and other facilities could convert a very large acreage of undeveloped public and private land. Table 4.11-1 lists the existing and foreseeable projects that have the potential to combine with the DHSP to result in a cumulative effect.

Table 4.11-1. Cumulative Projects within the Geographic Scope of Cumulative Analysis

Resource Area / BLM Program Area	Geographic Area of Consideration	Elements to Consider	BLM Authorized and Other Known County Projects/Actions/Activities
Lands and Realty	Eastern Riverside County	Impacts to surrounding land and realty uses, conflicts with habitat conservation or natural community conservation plans, increase developed and industrial use	All projects listed in Tables 4.1-1 and 4.1-2. Large scale energy projects in the nearby vicinity include: • Desert Sunlight Solar Farm Project • Silverado Power Solar Project • Desert Center 50 Solar Project • Eagle Mountain Pumping Plant • Sol Orchard • Palen Solar Power Project

A large number of renewable projects have been proposed on BLM-administered land, state land, and private land in California, including the Desert Sunlight Solar Farm Project, Silverado Power Solar Project, Desert Center 50 Solar Project, Eagle Mountain Pumping Plant, Sol Orchard, and Palen Solar Power Project all within 10 miles of the proposed project. However, not all projects listed will complete the environmental review process, and not all projects will be funded and constructed. Therefore, it is unlikely that all of the projects would be constructed for the following reasons: (1) Not all developers will develop the detailed information necessary to meet BLM standards; (2) The large size of many projects may result in permitting challenges related to endangered species, mitigation measures or requirements, and other issues; and (3) After project approval, construction financing must be obtained (if it has not been obtained earlier in the process).

Cumulative Effects Analysis

Alternatives 1, 2, 3, and A. Alternatives 1, 2, and A would not have any project-level effects and would not contribute to cumulative adverse effects.

Alternative 4. Existing development near the project area includes those projects listed in Table 4.1-1 (Existing Projects in the I-10 Corridor). Within the I-10 corridor area used in this analysis, estimated at over 2,040,000 acres (see Table 4.1-2 – Foreseeable Projects Along the I-10 Corridor [Eastern Riverside County]), foreseeable projects could convert over 52,000 acres, or 2.5 percent, to new land uses. The proposed project would represent 1,208 acres, or 2.3 percent or the land converted and less than 0.1 percent of the I-10 corridor area. Three of the energy projects in Table 4.1-2 are in the vicinity of Alternative 4: Palen Solar Power Project, Desert Sunlight Solar Farm Project (currently under construction), and Eagle Mountain Pumped Storage Project. These projects would add large and small-scale industrial, utility-related and other uses in the region, resulting loss of access to lands that are currently managed for multiple-use by BLM. The DSSF is adjacent to the DHSP site, immediately to the north.

Past development has increased human use of land in the project area. However, because of the limited availability of water, human development in the project area has been limited to small scattered towns and cities and various isolated projects such as the mine and water pumping station, among large tracts of undeveloped land. Construction of multiple projects within the same area could create a substantial adverse cumulative effect to surrounding land and realty uses if the projects were built on or adjacent to areas with planned land and realty uses or with existing easements of ROW. The incremental contribution of Alternative 4 to cumulative effects would be small because of the size of the project and because no development is planned on the project site. Implementation of AM LU-1, which requires notification of all major project construction milestones to property owners within 300 feet of the project would ensure property owners are aware of the changes to the existing land use due to construction of the project.

While construction and operation effects of the projects included in the cumulative scenario would likely conflict with habitat conservation or natural community conservation plans, each project included in this cumulative analysis would be required under the HCPs and DRECP interim CDFG requirements to include mitigation for any effects. Similarly, it is not likely that cumulative construction effects would affect agricultural land or zoning, as agriculture in the project area is restricted by limited water supplies.

Operation of the foreseeable projects in the project study area would substantially increase developed and industrial use of land in the area. Given the size and diversity of these projects and the large acreage of currently undeveloped BLM-administered land in the project area, it is likely that several of these projects could conflict with existing or planned land uses or with applicable state or local land use plans and zoning designed to minimize environmental effects. Based on the scale of land use conversion (over 52,000 acres or 2.5 percent of the land along the I-10 corridor), cumulative effects would be considered substantially adverse. The incremental effect of Alternative 4 would represent a substantial portion (over 2 percent) of the land converted but would represent a change or less than 0.1 percent of the land along the I-10 corridor.

Alternative B. Alternative B would not contribute to cumulative air quality effects, as the cumulative scenario assumes concurrent construction of the Desert Sunlight approved gen-tie

and Alternative B conductor stringing using the same crew at the same time, with no additional work required for Alternative B beyond what is required for the Desert Sunlight gen-tie.

Alternatives 5, 6, and 7. In light of their similarities, the lands and realty cumulative effects for Alternatives 5 and 6 would be essentially the same as described for Alternative 4 and cumulative effects would be substantially adverse.

Alternatives C, D, and E. Existing development near Alternatives C, D, and E would be the same as for Alternative 4 and includes those projects listed in Table 4.1-1 (Existing Projects in the I-10 Corridor). Within the I-10 corridor area used in this analysis (see Table 4.1-2 – Foreseeable Projects Along the I-10 Corridor [Eastern Riverside County]), foreseeable projects could convert over 52,000 acres to new land uses. The DSSF is adjacent to the DHSP site, immediately to the north and the DSSF gen-tie line would parallel Alternative C.

Construction of multiple projects within the same area could create a substantial adverse cumulative effect to surrounding land and realty uses. The incremental contribution of Alternative C, D, and E to cumulative effects would be minimal because of the limited duration of construction and ground disturbance for the gen-tie line and would be reduced through implementation of AM LU-1, which requires property owners within 300 feet of the project to be notified of all major project construction milestones.

While construction and operation effects of the projects included in the cumulative scenario would likely conflict with habitat conservation or natural community conservation plans, each project included in this cumulative analysis would be required under the HCPs and DRECP interim CDFG requirements to include mitigation for any effects. Similarly, it is not likely that cumulative construction effects would affect agricultural land or zoning, as agriculture in the project area is restricted by limited water supplies and the gen-tie lines would not require large amounts of ground disturbance nor would they require use of land used for agriculture.

Operation of the foreseeable projects in the project area would substantially increase developed and industrial use of land in the area. Given the size and diversity of these projects and the large acreage of currently undeveloped BLM-administered land in the project area, it is likely that several of these projects could conflict with existing or planned land uses or with applicable state or local land use plans and zoning designed to minimize environmental effects. Although the scale of land use conversion is considerable, the incremental effect of Alternatives C, D, and E would represent a minor portion (less than 0.5 percent) of the land converted in the project study area and would not be substantially adverse.

4.11.16 CEQA Considerations

CEQA Significance Criteria

The significance criteria listed below are from the Environmental Checklist Form in Appendix G of the CEQA Guidelines. Under CEQA, the proposed project and alternatives would have significant impact on lands, realty, or agriculture if they would:

LU-1 Conflict with existing or planned land uses on or around the site;

LU-2 Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including but not limited to the general plan, specific

plan, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect;

LU-3 Conflict with any applicable habitat conservation plan (HCP) or natural community conservation plan;

LU-4 Conflict with existing zoning for agricultural use, and/or a Williamson Act contract; or

LU-5 Involve other changes in the existing environment which, due to their location or nature, could result in conversion of farmland to non-agricultural use or conversion of forest land to non-forest use.

For the proposed project and alternatives, the following CEQA criteria were determined to be inapplicable or to result in no impact under all alternatives. The determination regarding these significance criteria is discussed below, and these criteria are not discussed further in this section.

- Physically divide an established community:

  The proposed project and alternatives would not physically divide an established community; therefore, there would be no impact. Although there is some residential development in the project area, the proposed project and alternatives would not divide this development.

- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the maps pursuant to the Farmland Mapping and Monitoring Program (FMMP) of the California Resources Agency and the United States Department of Agriculture Natural Resources Conservation Service Web Soil Survey, to non-agricultural uses:

  There is no FMMP-designated Prime or Unique Farmland or Farmland of Statewide Importance in the project area; therefore, there would be no impact.

- Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220[g]), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104[g]):

  The proposed project and alternatives would not be located on any forest or timberland; therefore, there would be no impact.

- Result in the loss of forest land or conversion of forest land to non-forest use:

  The proposed project and alternatives would not be located on any forest land; therefore, there would be no impact.

CEQA Significance Determination

Alternatives 1, 2, 3, and A would not have any impacts related to land use, realty, or agriculture. Under these alternatives the DHSP and gen-tie lines would not be approved and would not be constructed. Lands would remain in their existing use.

Alternative 4. The proposed solar layouts would develop 1,208 acres of BLM-administered multiple use land for solar energy production, precluding other uses of this land for the duration of the project. However, because the land is generally undeveloped, no specific planned land

uses have been identified, and only a small percentage of the existing undeveloped land would be affected.

Alternative 4 would overlap several existing uses including roads and transmission lines; however, by implementing AM LU-1, impacts would be reduced. Impacts to the WHMA would be minimal given the small size, unusual shape, and low connectivity of the overlapping WHMA area under Alternative 4, and implementation of mitigation measures for biological resources would mitigate these impacts. Mitigation Measure VEG-6 (Provide Off-Site Compensation for Impacts to Vegetation and Habitat) and MM WIL-9 (Pro-Rated Contribution to the Desert Tortoise Population Connectivity Effectiveness Monitoring Plan) would offset project impacts to wildlife movement, including desert tortoise population connectivity, in the upper Chuckwalla Valley. MM VEG-6 incorporates the requirement that "The primary focus area for acquiring parcels to maintain/improve connectivity will be along the I-10 corridor between Desert Center and Cactus City with a priority on parcels that connect conserved lands on either side of the I-10 through large culverts or bridges; the habitat compensation ratio for mitigation lands along the I-10 corridor shall be 1:1 for each acre of total long-term and permanent disturbance." MM WIL-9 would require the project owner to contribute on a pro-rated basis to funding the Desert Tortoise Population Connectivity Effectiveness Monitoring Plan conservation measure described in the Desert Sunlight Biological Opinion. With these measures impacts related to existing and planned uses (criterion LU-1) would be less than significant.

There would be no impact for Criterion LU-3 because the alternatives would not overlap any HCPs.

There would be no impact under LU-2, LU-4 and LU-5. With regard to LU-2, the project/Alternative 4 would be compatible with the relevant land use classifications. With regard to LU-4 and LU-5, there would be no impact because the DHSP site would not overlap any agricultural lands.

Decommissioning impacts are not applicable to LU-1, LU-4 and LU-5. LU-1 is not applicable because conflicting uses would not be allowed while the site was in use for solar energy generation. BLM's NEPA process would ensure compatibility of future uses with existing land uses in the project area. Decommissioning would present an opportunity for the land to be used for other purposes and remove overlaps with existing uses such as roads and transmission lines. LU-4 and LU-5 are not applicable, as there is no existing agricultural land on the project site, nor would any be designated while the site was in use as a solar project. There would be no impact under LU-2 because the land would be restored to a state compatible with the CDCA Plan or future applicable land use plans, policies, or regulations. There would be no impact under LU-3 because the alternatives would not overlap any HCPs.

As described in Section 4.11.15, the effects of Alternative 4, when considered with existing and proposed projects in the area, could present a cumulatively considerable impact on lands and realty. However, implementation of AM LU-1 would minimize the project's contribution to these potential impacts to less than considerable.

Alternative 5. Impacts from Alternative 5 would be the same as those under Alternative 4, but with impacts to the WHMA eliminated.

Alternative 6. Impacts from Alternative 6 would be the same as those under Alternative 4, but slightly reduced by the smaller project footprint.

Alternative 7. Impacts from Alternative 7 would be the same as those under Alternative 4, but slightly reduced by the smaller project footprint.

Alternative B. Impacts from the Alternative B gen-tie line would be less than significant for criterion LU-1. There would be no impact under LU-2, LU-4, and LU-5.

With regard to LU-1, although development of Alternative B would preclude other uses of the land, because the land is currently undeveloped and no specific planned land uses have been identified, impacts would be less than significant. In addition, Alternative C would overlap several existing uses including roads and transmission lines; however, by implementing AM LU-1, impacts would be further reduced.

With regard to LU-2, there would be no impact because Alternative B would be compatible with the relevant land use classifications. With regard to LU-4 and LU-5, there would be no impact because Alternative B would not overlap any agricultural lands. Construction impacts would be less than significant for criterion LU-3. Although lands in the Chuckwalla DWMA and CHU would be temporarily and permanently disturbed by construction of Alternative B, the lands disturbed would be much less than the 1 percent allowed by the NECO Plan.

Decommissioning impacts are not applicable to LU-1, LU-4, and LU-5. There would also be no impact under LU-2. This is because conflicting uses would not be allowed while the site was in use for the gen-tie line, and because decommissioning would present an opportunity for the land to be used for other purposes and remove overlaps with existing uses such as roads and transmission lines. For LU-3, initial impacts would be less than significant as decommissioning activities would temporarily disturb additional land in the Chuckwalla DWMA and CHU similar to what occurred during construction. However, when decommissioning was complete, beneficial impacts would result because this land would be restored.

Alternative B would be built on the reasonably foreseeable DSSF gen-tie towers and would not require additional permanent ground disturbance or additional work crews for conductor stringing. As such, it would not contribute to cumulative impacts to lands and realty.

Alternative C. Project-level impacts from the Alternative C gen-tie line would be similar to those of Alternative B.

As described in Section 4.11.15, the effects of Alternative C, when considered with existing and proposed projects in the area, could present a cumulatively significant impact on lands and realty. However, implementation of AM LU-1 would minimize the project's contribution to these potential impacts to less than considerable.

Alternative D. Construction impacts would be less than significant for criterion LU-1. There would be no impact under LU-2, LU-4, and LU-5.

With regard to LU-1, although development of Alternative D would preclude other uses of the land, because the land is currently undeveloped and no specific planned land uses have been identified, impacts would be less than significant. In addition, Alternative D would overlap several existing uses including roads and transmission lines; however, by implementing AM LU-1, impacts would be reduced. With regard to LU-2, there would be no impact because Alternative D would be compatible with the relevant land use classifications. With regards to LU-4 and LU-5, there would be less-than-significant impacts.

Although Alternative D would cross farmland protected as Non-Prime under the Williamson Act, transmission lines are consistent with farmland use. The farmlands crossed are currently zoned A-1-20, which permits use by utilities with county permit and approval.

Impacts would be less than significant for criterion LU-3. Although lands in the Chuckwalla DWMA and CHU would be temporarily and permanently disturbed by construction of Alternative D, the lands disturbed would be much less than the 1 percent allowed by the NECO Plan.

Decommissioning impacts are not applicable to LU-1, LU-4 and LU-5. There would be no impact under LU-2. LU-1 is not applicable because conflicting uses would not be allowed while the site was in use as Alternative D. BLM's NEPA process would ensure compatibility of future uses with existing land uses in the project area. Decommissioning would present an opportunity for the land to be used for other purposes and remove overlaps with existing uses such as roads and transmission lines. Impacts related to LU-4 and LU-5 would be less than significant. While decommissioning would occur on agricultural land protected as Non-Prime by the Williamson Act, utility activities are consistent with this land use and permitted by zoning. With regard to LU-2, there would be no impact because the land would be restored to a state compatible with the CDCA Plan or future applicable land use plans, policies, or regulations. For LU-3, initial impacts would be less than significant as decommissioning activities would temporarily disturb additional land in the Chuckwalla DWMA and CHU similar to what occurred during construction. However, when decommissioning was complete, beneficial impacts would result because this land would be restored and could again be used as a habitat conservation area.

As described in Section 4.11.15, the effects of Alternative D, when considered with existing and proposed projects in the area, could present a cumulatively significant impact on lands and realty. However, implementation of AM LU-1 would minimize the project's contribution to these potential impacts to less than considerable.

Alternative E. Because of its proximity to Alternative D, impacts resulting from Alternative E would be similar. Alternative E does not overlap agricultural land uses, however. Impacts from this alternative would be less than significant, with no mitigation required.

4.12 NOISE AND VIBRATION

4.12.1 Methodology for Analysis

Noise and vibration impacts associated with the Desert Harvest Solar Project (DHSP) and alternatives were identified by independent evaluation of various project-related components capable of producing noise and vibration related effects. The identified issues include:

- Noise from on-site construction activity at the solar panel field site (including the project substation), and along the transmission line corridor;
- Noise from construction-related vehicle traffic;
- Noise from facility operations; and
- Vibration impacts from on-site construction activity.

Noise impacts to wildlife are addressed in Section 4.3, Biological Resources – Vegetation.

Analysis of these issues was performed through quantitative analysis of expected noise levels, review of agency policies and regulatory requirements, and qualitative analyses for issues that did not lend themselves to quantitative evaluation. Quantitative analyses were prepared to address noise and vibration from construction equipment operations, noise from construction-related traffic, and noise from facility operations. Much of the analysis contained herein relies upon the analysis contained in the *Desert Sunlight Solar Farm Project Final EIS and CDCD Plan Amendment* (2011; incorporated by reference in Section 1.11), as this project is located immediately north of the Desert Harvest Solar Project (DHSP) solar facility site, would utilize the same type of solar panels (photovoltaic), and includes the installation of a gen-tie line and on-site substation (6.3 acres), similar to the proposed project. Additional details regarding effects assessment methodologies are discussed under relevant impact topics.

The area of interest for noise and vibration issues is typically localized. Airborne noise dissipates fairly rapidly with increasing distance from the noise source. The distances involved depend primarily on the intensity of the noise generated by the source, and partly on weather conditions such as wind speed and direction, the height and strength of temperature inversions, and the height of cloud cover. Sound is detectable somewhat further downwind than upwind of a noise source. Temperature inversions and cloud cover can reflect or refract sound that is radiated upwards; this effect can increase noise levels at locations that receive the reflected or refracted sound. Such reflection and refraction effects are important primarily for high intensity sounds. For noise sources such as construction activity and vehicle traffic, the region of influence is typically less than 0.25 mile from the noise source.

Ground-borne vibrations typically dissipate rapidly with increasing distance from the vibration source. The distances involved depend primarily on the intensity of the vibrations generated by the source, and partly on soil and geologic conditions. Detectable vibrations will travel the greatest distance through solid rock and the least distance through loose, unconsolidated soils or saturated soils. For vibration sources such as construction activity and vehicle traffic, the region of influence is typically less than 1,000 feet from the vibration source.

Table 4.12-1 compares the distances of the closest existing residences to action alternative features. One home site is located 1,320 feet (0.25 miles) from the property line of the solar facility

site; however, this site is not currently in use. In addition, the closest area of the JTNP is 1.8 miles (9,400 feet) northeast of the solar facility site.

Table 4.12-1. Comparison of Distances of the Closest Residences to the Project Features

Project Component	Distance to Closest Existing Residence	Substation
Alternative 4 – Proposed Solar Project	6,500 feet	No nearby residences
Alternative 5 – Solar Project Excluding WHMA	6,500 feet	No nearby residences
Alternative 6 – Reduced Footprint Solar Project (excludes WHMA and SW site)	6,500 feet	No nearby residences
Alternative B – Proposed Gen-Tie (Shared Towers)	500 feet	No nearby residences
Alternative C – Separate Transmission Towers within Same ROW	500 feet	No nearby residences
Alternative D – Cross-Valley Alignment	1,450 feet	No nearby residences
Alternative E – New Cross-Valley Alignment	900 feet	No nearby residences

Source: Google Earth 2011.

4.12.2 Applicant Measures

The following Applicant Measure (AM) has been incorporated as a design feature of the proposed project (and all action alternatives) and shall be implemented to reduce adverse impacts associated with the project. In some cases, mitigation measures further clarify or expand on AM reporting requirements, timing of implementation, or other details where appropriate. Where there is a conflict between provisions of the mitigation measures imposed and the following AM, the mitigation measures take precedence.

AM N-1 **Construction Schedule**. Most construction activity will be limited to daytime hours consistent with Riverside County noise ordinance limitations. Certain electrical connection activities at the solar project site would occur at night for safety reasons, but would not require any heavy equipment operations.

4.12.3 Alternative 1 – No Action (No Plan Amendment)

Under Alternative 1, the proposed DHSP would not be approved by the BLM, and BLM would not amend the CDCA Plan. As a result, no solar energy project would be constructed on the project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

As a result, no noise impacts related to the DHSP would occur.

4.12.4 Alternative 2 – No Project Alternative (with Plan Amendment to Find the Site Suitable for Solar Energy Development)

Under Alternative 2, the proposed DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site available for future solar energy development. As a result, the DHSP would not be constructed on the project site, and BLM would manage the site consistent with the amended land use designation in the CDCA Plan. It is possible, as a result of the CDCA Plan amendment, that in the future another solar energy generation project could be proposed with impacts similar to the DHSP, however, such impacts are speculative at this time, and no effects from the DHSP would occur.

4.12.5 Alternative 3 – No Project Alternative (with Plan Amendment to Find the Site Unsuitable for Solar Energy Development)

Under Alternative 3, the DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site unavailable for future solar energy development. As a result, the DHSP would not be constructed on the project site and BLM would manage the site consistent with the amended land use designation in the CDCA Land Use Plan. No impacts from the DHSP would occur.

4.12.6 Alternative 4 – Proposed Solar Project

Effects on the existing ambient noise and vibration levels may arise from project construction, operations and maintenance, and decommissioning equipment and vehicles as well as from the introduction of construction or operations and maintenance-related traffic on local roads near the proposed solar facility site.

Construction

Construction of Phase 1 is expected to begin in April 2013 and continue to July 2013 (3 months). Construction of Phase 2 (137 MW) is expected to begin in September 2013 and continue to November 2014 (14 months). Construction of Phase 3 (13 MW) would begin in November 2014 and continue to May 2015 (6 months) (24 months total for Phases 1, 2 and 3). The on-site workforce during construction is expected to be as high as 250 workers at the peak of construction, with an estimated average workforce of 100 workers. Construction would generally occur 2 hours before sunrise and 2 hours after sunset, Monday through Friday. Additional hours may be necessary to correct schedule deficiencies or to complete critical construction activities, and during the startup phase of the project, some activities may be performed over the weekend or at night depending on safety requirements. An estimated 4,425 truck roundtrips would be required throughout construction to deliver equipment and materials, with an estimated maximum of 46 deliveries per day (heavy-duty truck roundtrips) for the solar facility site. It is anticipated that material deliveries for the solar facility would maintain a constant flow over the 24-month construction period (Phases 1, 2, and 3).

Site preparation would consist of removal of vegetation within the project area by scarification, where necessary. Preparation would likely proceed by section, so that only the portion of the solar facility site where panels are about to be laid out over a period of 6 months would be scarified at one time. Site grading would be limited to the major access roads, inverter pad locations, and the ancillary facilities, including the parking area, O&M building, and switchyard. Grading would also be completed if the slope is greater than 1 percent at the set-back boundaries of defined intermittent streams to reduce the slope and make continuous with the solar panel area. After the site is prepared and graded, the panel field would be laid out. The panel field would consist of solar panels arranged on either fixed-tilt or tracking frames in long rows. The uprights for the frame would either be driven into the ground by means of a small pile-driver or supported by pre-poured concrete foundations (ballasts) on the surface of the soil, depending on soil studies and engineering design. Inverters and transformers would be located throughout the solar facility, and connect to the project substation and switchyard via underground trenching. The project substation, O&M building, and parking/storage area would cover 5.2 acres in the northwest corner of the solar facility site; however, for Alternative E (New Cross-Valley Alignment) the substation would be located in the southern-middle portion of the site.

Temporary construction buildings, including three to four trailer offices would be placed along the western border of the project area near the entrance gate along with portable latrines. A small laydown area to accommodate delivery of materials, vehicles, etc. would be located adjacent and north of the substation. Additional parking and delivery of construction materials would utilize the future substation footprint, prior to its construction. Temporary staging areas would be located throughout the project area, and would be used until their area was overcome by the build-out of the panel array.

The project site would be accessed from I-10, utilizing the on-ramp/off-ramp of Rice Road (SR-177), and heading north on the existing Kaiser Road along the western boundary of the project area to a new facility access road to be located in the northwest corner of the project site. New unpaved roads would be constructed to serve as access roads from the existing road network to the facilities and photovoltaic field.

Direct Effects

Solar Facility Construction (Includes On-Site Substation)

Noise from On-Site Construction Activities. Noise generated from on-site construction activities would be similar to the estimated noise levels for the various construction phases determined for the Desert Sunlight Solar Farm Project, as this project also includes the installation of PV arrays and an on-site substation. The Desert Sunlight Solar Farm Project, however, is substantially larger than the DHSP, as it covers over 4,000 acres and includes installation of PV arrays to provide an annual generation capacity of 550 MW, all within a similar construction timeframe as the DHSP (26 months vs. 24 months for DHSP). The DHSP solar facility would cover just over 1,200 acres and would install PV arrays to provide an annual generation capacity of 150 MW in a 24-month timeframe. The project would cover about one-third the area (30 percent) and would install just over one-fourth (27 percent) of the generation capacity (i.e., number of PV arrays) compared to the Desert Sunlight Solar Farm Project. This means that less-intense construction activity and fewer construction crews would be required for the DHSP, the distance between crews working on the site may be greater, and/or there may be fewer overlapping activities. However, since construction activities are generally spread throughout the site, having multiple activities going on simultaneously (i.e., greater intensity) does not necessarily result in different noise levels at a given location, as the construction activity closest to an off-site receptor would generally dominate the noise environment with minimal, if any, additive noise from other activities going on in other areas located farther away. Therefore, the difference in intensity between the DHSP and the Desert Sunlight Solar Farm Project would not necessarily result in greater or lesser noise levels for off-site receptors. Additionally, similar construction equipment would be utilized for each of these projects, including pile driver, loader, dozer, grader, forklift, backhoe, trencher, roller, and plow. Therefore, the estimated construction noise levels for the various phases of on-site construction estimated for the Desert Sunlight Solar Farm Project provide a representative estimate of the noise levels that would be generated by the DHSP.

As noted above, DHSP solar facility development would occur over a 24-month period, and would occur in phases. Construction of Phases 1 and 2 would include site grading and preparation of a portion of the site, construction of the O&M building and on-site roads, on-site well, on-site substation and switchyard, and assembly and installation of panel blocks and wiring. Con-

struction of Phase 3 would include additional grading and preparation, assembly and installation of panel blocks and wiring, and construction of the on-site settling ponds. Construction activity would generally occur over a standard five-day workweek (Monday-Friday) with activity limited to daytime hours when located near inhabited dwellings pursuant to Mitigation Measure NOI-1 and consistent with the Riverside County noise ordinance (beginning at 7:00 a.m. during most of the year, and perhaps starting as early as 6:00 a.m. during the summer months, and ending no later than 6:00 p.m.). For safety reasons, some electrical connection activity would typically occur at night when the solar panels are not energized, but this activity would not require any significant heavy equipment operations.

Construction noise was modeled for the following construction sub-phases:

- Vegetation clearing;
- Site grading;
- Installation of array support posts;
- Trenching and underground power cable installation; and
- Soil compacting and dust palliative application.

Other construction activity sub-phases would be expected to generate lower noise levels than these phases. In most cases, equipment used during a construction sub-phase would be distributed in groups of items in different portions of the active construction area. Not all equipment items would operate concurrently, but several items of equipment would typically be active over a construction day. Equipment items that would typically be operating in proximity were identified and used in the construction noise analyses. Table 4.12-2 summarizes the construction noise analysis results for the five sub-phases with the greatest potential for noise generation during solar facility site construction.

Table 4.12-2. Summary of Construction Noise for the Solar Facility Site

Construction Phase	Typical Equipment	Distance from Construction (feet)	Maximum 1-Hour Leq Increment (dBA)	Average Daytime Leq Increment (dBA)	CNEL Increment (dBA)
Vegetation Clearing	Brush Cutters, Tracked Dozer, Wheeled Tractor, Wheeled Loader, Wood Chipper, ATVs, Water Truck, Dump Truck	100	80.6	77.1	74.1
		400	67.9	64.5	61.5
		700	62.4	59.0	55.9
		1,000	58.7	55.2	52.2
		1,500	54.1	50.6	47.6
		2,500	47.5	44.0	41.0
Site Grading	Scraper, Tracked Dozer, Grader, Roller-Compactor, ATVs, Water Truck	100	81.3	78.9	75.9
		400	68.6	66.2	63.2
		700	63.1	60.7	57.7
		1,000	59.3	57.0	54.0
		1,500	54.7	52.4	49.3
		2,500	48.0	45.7	42.7
Array Post Installation	Auger Rig, Vibratory Pile Driver, Forklift, ATVs, Water	100	83.2	81.3	78.3
		400	70.7	68.8	65.8

Table 4.12-2. Summary of Construction Noise for the Solar Facility Site

Construction Phase	Typical Equipment	Distance from Construction (feet)	Maximum 1-Hour Leq Increment (dBA)	Average Daytime Leq Increment (dBA)	CNEL Increment (dBA)
	Truck, Flatbed Truck	700	65.3	63.5	60.5
		1,000	61.7	59.9	56.9
		1,500	57.4	55.5	52.5
		2,500	51.3	49.4	46.4
Trenching and Underground Cable Installation	Trencher, Backhoe-Loader, Cable Plow, Forklift, ATVs, Flatbed Truck, Dump Truck, Water Truck	100	75.7	72.6	69.6
		400	63.2	60.1	57.1
		700	57.8	54.7	51.7
		1,000	54.2	51.1	48.1
		1,500	49.9	46.7	43.7
		2,500	43.9	40.6	37.6
Soil Compaction and Dust Palliative Application	Roller-Compactors, ATVs, Water Truck	100	74.8	72.2	69.1
		400	62.3	59.7	56.7
		700	57.1	54.5	51.4
		1,000	53.5	50.9	47.9
		1,500	49.3	46.7	43.7
		2,500	43.5	40.9	37.9

Leq = equivalent continuous noise level
CNEL = community noise equivalent level (a 24-hour weighted average)
Source: BLM 2011 – Table 4.10-2.

There are a few scattered rural residences within 1.5 miles of the proposed solar facility site (refer to Figure 3.12-1 in Section 3.12), including an unoccupied home site 1,320 feet (0.25 miles) from the property line. The closest occupied residence is about 6,500 feet (1.24 miles) east-southeast from the proposed solar facility property line. All other nearby occupied homes are approximately 7,800 feet (1.48 miles) or farther from the proposed solar facility property line. The closest home south of the proposed solar facility along Kaiser Road is 1.5 miles from the site. JTNP is located 1.8 miles to the northeast, 3.5 miles to the west, and over 7 miles to the north of the proposed solar facility site. The Eagle Mountain Elementary School and the Eagle Mountain Village residential area are over 5.5 miles northwest of the proposed solar facility site. The Lake Tamarisk development is about 2.75 miles south of the proposed solar facility site. The Community of Desert Center is about 5 miles south of the proposed solar facility site.

Construction of the solar facility would involve a few periods when construction activity would be within 6,500 feet of the closest occupied residence east-southeast of the solar facility site (installation of perimeter fencing and construction of the closest solar array modules). For most of the 24-month construction period, however, construction activity at the proposed solar facility site would be well over 6,500 feet from the nearest residence and more than 1.48 miles from other identified sensitive receptors (residences, schools, JTNP, etc.).

Existing background noise levels near the solar facility site are expected to be low, with typical daytime noise levels of 35 to 50 dBA. Background noise levels would be higher during periods of strong winds. Ambient noise levels within JTNP are expected to be 35 dBA or less. The

National Park Service (NPS) has provided a performance standard for noise mitigation, which is to limit noise levels at the Park boundary from the project to 35 dBA. This would meet the Park's stated goal of encouraging no increase in ambient noise levels within the Park from construction activities outside the Park. Based on construction noise estimates presented above in Table 4.12-2, noise from construction activity generally would be audible at locations less than a half mile from the solar facility; however, no occupied residence or other sensitive receptor is located this close to the solar facility site. When construction activity is occurring in the western and northern portions of the solar facility site, it would not be audible for any nearby residences. For any location greater than 2,500 feet, maximum CNEL noise levels from construction activity would be less than 46 dBA (highest level occurs during array post installation), which is within Riverside County's normally acceptable range for rural residential land uses. Maximum 1-hour Leq noise levels at distances greater than 2,500 feet would be about 43 dBA or less. This would be within expected average background noise conditions and would not result in a substantial increase over daytime noise levels even when ambient levels are as low as 35 dBA. Implementation of Mitigation Measure NOI-2 would require the on-site construction activities to be monitored and controlled so that they do not cause noise levels above 35 dBA at the boundary to JTNP, thereby meeting the Park's stated goal.

Noise from Construction-Related Traffic. After exiting I-10, project-related construction trucks and worker vehicles would travel north along SR-177 and then continue north along Kaiser Road to the main entrance of the project site. Baseline existing traffic conditions were analyzed for these roadways utilizing traffic data collected in November 2011 and presented in the Traffic Study for the DHSP (Hernandez, Kroone & Associates 2012). Baseline traffic conditions for I-10 were developed from 2008 traffic count data and 2007 truck count data downloaded from the Caltrans website (BLM 2011). In addition, traffic from construction of the Desert Sunlight Solar Farm Project would increase traffic along these routes. I-10 was split into two segments, one east of SR-177 and the other west of SR-177. Caltrans data show that medium trucks (two axles and six tires) account for 5.2 percent of annual average daily traffic (AADT) on I-10 west of SR-177 and 5.6 percent of AADT on I-10 east of SR-177 (BLM 2011 – Table E2-1). Caltrans data also show that heavy trucks (three or more axles) account for 34.3 percent of AADT on I-10 west of SR-177 and 37.8 percent of AADT on I-10 east of SR-177 (BLM 2011 – Table E2-1).

Existing traffic conditions along SR-177 south of Kaiser Road and along Kaiser Road in the project vicinity were based on 24-hour traffic counts completed in November 2011 and provided in the Traffic Study for the DHSP (Hernandez, Kroone & Associates 2012 – Appendix B). Traffic counts show that on SR-177 south of Kaiser Road medium trucks account for 10.9 percent and heavy trucks account for 27.5 percent of the existing traffic. Kaiser Road was modeled in two segments, one between SR-177 and the Lake Tamarisk development (south of Lake Tamarisk Road), and the other between the Lake Tamarisk development and the project site (north of Lake Tamarisk Road). Traffic counts show that on Kaiser Road medium trucks account for 14.4 percent of existing average daily traffic and heavy truck account for 17.3 percent (Hernandez, Kroone & Associates 2012 – Appendix B). Traffic counts taken north of the Lake Tamarisk development show that on Kaiser Road medium trucks account for 19.3 percent of existing average daily traffic and heavy trucks account for 2.5 percent (Hernandez, Kroone & Associates 2012 – Appendix B).

Construction periods for the solar project and gen-tie line would be expected to overlap. Kaiser Road would be used by construction-related traffic for both the solar project and the gen-tie line. Consequently, construction-related traffic volumes used for this analysis were the combined volumes attributable to solar project construction and gen-tie line construction. Based on the equipment materials and deliveries estimated for the solar project, a worst-case scenario of up to 52 deliveries per day would occur (see Hernandez, Kroone & Associates 2012 – Appendix B, Distribution of Construction Traffic by Time of Day). Overall construction period traffic patterns were developed by adding construction-related truck trips and construction-related worker commute trips to the baseline hourly traffic patterns for each roadway segment. Construction truck traffic was assumed to be all heavy trucks. Construction-related worker commute traffic was assumed to be all autos with 30 percent of the normal crew (or 27 workers) carpooling, reducing the total number of vehicles by 27. Arriving worker commute traffic was assumed to occur between 5:00 a.m. and 8:00 a.m., and to depart between 4:00 p.m. and 7:00 p.m. (see Hernandez, Kroone & Associates 2012 – Appendix B, Estimate of Construction Employee Trips – Desert Harvest Project Trips). Analysis was performed for the peak construction period, which would include 240 construction workers and 10 security guards (250 total). The traffic noise modeling assumed free-flow vehicle speeds of 45 miles per hour (mph) on Kaiser Road, 50 mph on SR-177, and 65 mph on I-10.

Table 4.12-3 summarizes modeled peak 1-hour Leq and CNEL levels for existing conditions and existing plus project construction at various distances (e.g., 50 feet, 100 feet, 250 feet, 500 feet, 750 feet, and 1,000 feet) from the road centerline. Please refer to the Appendix F for detailed calculations.

Table 4.12-3. Modeled 1-Hour Leq/CNEL Noise Levels from Construction Traffic, Proposed Project

Traffic Noise Source	Distance from Road Centerline (feet)	Existing 1-Hour Leq / CNEL (dBA)	Existing + Proposed Project 1-Hour Leq / CNEL (dBA)	Change from Existing 1-Hour Leq / CNEL (dBA)
Desert Center (I-10), West of SR-177	50	81.7 / 79.6	81.8 / 79.9	0.1 / 0.3
	100	78.6 / 76.6	78.7 / 76.8	0.1 / 0.2
	250	74.7 / 72.6	74.7 / 72.8	0.0 / 0.2
	500	71.7 / 69.6	71.7 / 69.8	0.0 / 0.2
	750	69.9 / 67.8	70.0 / 68.0	0.1 / 0.2
	1,000	68.6 / 66.6	68.7 / 66.8	0.1 / 0.2
Desert Center (I-10), East of SR-177	50	81.7 / 79.7	81.8 / 79.9	0.1 / 0.2
	100	78.6 / 76.6	78.7 / 76.8	0.1 / 0.2
	250	74.7 / 72.6	74.7 / 72.8	0.0 / 0.2
	500	71.7 / 69.6	71.7 / 69.8	0.0 / 0.2
	750	69.9 / 67.8	70.0 / 68.1	0.1 / 0.3
	1,000	68.7 / 66.6	68.7 / 66.8	0.0 / 0.2

Table 4.12-3. Modeled 1-Hour Leq/CNEL Noise Levels from Construction Traffic, Proposed Project

Traffic Noise Source	Distance from Road Centerline (feet)	Existing 1-Hour Leq / CNEL (dBA)	Existing + Proposed Project 1-Hour Leq / CNEL (dBA)	Change from Existing 1-Hour Leq / CNEL (dBA)
SR-177 South of Kaiser Road	50	70.9 / 72.0	71.4 / 72.7	0.5 / 0.7
	100	67.8 / 68.9	68.3 / 69.6	0.5 / 0.7
	250	63.8 / 64.9	64.4 / 65.6	0.6 / 0.7
	500	60.8 / 61.9	61.3 / 62.6	0.5 / 0.7
	750	59.1 / 60.1	59.6 / 60.8	0.6 / 0.7
	1,000	57.8 / 58.9	58.3 / 59.6	0.5 / 0.7
Kaiser Road South of Lake Tamarisk	50	61.9 / 62.2	64.6 / 66.0	2.7 / 3.8
	100	58.8 / 59.1	61.6 / 62.9	2.8 / 3.8
	250	54.9 / 55.1	57.6 / 58.9	2.7 / 3.8
	500	51.8 / 52.1	54.6 / 55.9	2.7 / 3.8
	750	50.1 / 50.3	52.8 / 54.1	2.7 / 3.8
	1,000	48.8 / 49.1	51.6 / 52.9	2.8 / 3.8
Kaiser Road North of Lake Tamarisk	50	52.4 / 52.3	61.9 / 63.7	9.5 / 11.4
	100	49.3 / 49.3	58.8 / 60.6	9.5 / 11.3
	250	45.4 / 45.3	54.8 / 56.6	9.5 / 11.3
	500	42.3 / 42.3	51.8 / 53.6	9.5 / 11.3
	750	40.6 / 40.5	50.0 / 51.9	9.4 / 11.4
	1,000	39.3 / 39.3	48.8 / 50.6	9.5 / 11.3
Kaiser Road, Maximum Traffic Noise at JTNP Boundary	Joshua Tree NP	35.0 / 35.2	37.7 / 39.0	2.7 / 3.8

CNEL = community noise equivalent level (a 24-hour weighted average)
Source: Appendix N.

As shown in Table 4.12-3, construction-related traffic would have little noise effect in Desert Center due to the relatively high noise levels generated by existing traffic on I-10. Most people cannot detect noise level changes of less than 1.5 to 2 dBA, but find noise level changes of 3 to 5 dBA to be noticeable, and noise level changes of 5 dBA or more to be obvious. A 10-dBA noise level increase represents a doubling of perceived noise levels. Thus, changes in CNEL or 1-hour Leq noise levels of less than 1 dBA in the Desert Center area would not be noticeable. At greater distances from I-10, noise from construction-related traffic would have a greater influence on overall traffic noise conditions. Along SR-177 south of Kaiser Road, the increase in noise generated by construction traffic would be less than 1 dBA and not noticeable. Along Kaiser Road south of Lake Tamarisk Road there would be a noticeable increase in traffic noise levels (over a 3 dBA increase) and north of Lake Tamarisk Road noise levels would substantially increase (>10 dBA increase). At 50 feet from the centerline of Kaiser Road, CNEL levels would be within Riverside County's conditionally acceptable range for rural residential land uses (Table 3.12-2; 55-70 dBA CNEL) and at 180 feet back within the normally acceptable range for rural residential land uses (Table 3.12-2; up to 60 dBA CNEL).

The closest project roadway to JTNP is Kaiser Road (not including the I-10, where construction-related traffic would have little impact on traffic noise levels as indicated in Table 4.12-3). JTNP is located approximately 4.6 miles west of Kaiser Road at its closest point south of Lake

Tamarisk, and approximately 3.4 miles west of Kaiser Road at its closest point north of Lake Tamarisk. Ambient noise levels within JTNP are 35 dBA or less. As shown in Table 4.12-3, and assuming existing noise levels of 35 dBA at JTNP during daytime hours when the majority of construction activities would be occurring, noise levels within JTNP resulting from the additional construction traffic along Kaiser Road including noise from existing traffic to Lake Tamarisk would increase 3-4 dBA, which would be noticeable.

Ground Vibrations from Construction Activities. Heavy equipment and trucks used for solar facility construction are potential sources of ground vibration. Ground vibration conditions expected from solar facility construction have been evaluated using procedures developed by Caltrans (2004). The Caltrans procedure provides equations for predicting ground vibration levels by distance from selected types of construction equipment according to local ground conditions. Four categories of ground conditions are used to select equation parameters in the Caltrans procedure:

- Category 1: Weak or soft soils, loose soils, loose sand, mud, saturated soils, plowed ground, etc.;
- Category 2: Competent soils, most sands, sandy clays, silty clays, gravel, silts, weathered rock, etc.;
- Category 3: Hard soils, dense compacted sands, dry consolidated clay, consolidated glacial till, etc.;
- Category 4: Hard, competent rock, bedrock, exposed hard rock, etc.

Caltrans Category 2 conditions were considered representative of the solar facility area, same as for the Desert Sunlight Solar Farm Project located immediately north of the DHSP, for the early phases of construction when most heavy equipment would be in use. Although Category 3 might be representative of the on-site conditions at the solar facility following the soil compaction phase of construction activity, there would be much less heavy equipment use following that phase. In addition, Category 2 soil conditions would continue to prevail at off-site locations. Table 4.12-4 summarizes the results of the vibration analysis.

Table 4.12-4. Ground Vibration Levels for Typical Equipment Used for Solar Facility Construction

Equipment Type	Vibratory Type	Parameter	Distance from Operating Equipment Item			
			25 feet	100 feet	200 feet	300 feet
Vibratory Pile Driver, typical	Frequent or Continuous	PPV, in/sec	0.170	0.028	0.011	0.007
		Human Response	mildly annoying	barely perceptible	barely perceptible	not perceptible
		Building Damage Potential	very low	none	none	none
Self-Loading Scraper	Frequent or Continuous	PPV, in/sec	0.089	0.015	0.006	0.004
		Human Response	distinctly perceptible	barely perceptible	not perceptible	not perceptible
		Building Damage Potential	extremely low	none	none	none
Static Roller-Compactor	Frequent or Continuous	PPV, in/sec	0.089	0.015	0.006	0.004
		Human Response	distinctly perceptible	barely perceptible	not perceptible	not perceptible

Table 4.12-4. Ground Vibration Levels for Typical Equipment Used for Solar Facility Construction

Equipment Type	Vibratory Type	Parameter	Distance from Operating Equipment Item			
			25 feet	100 feet	200 feet	300 feet
		Building Damage Potential	extremely low	none	none	none
Large Bulldozer	Frequent or Continuous	PPV, in/sec	0.089	0.015	0.006	0.004
		Human Response	distinctly perceptible	barely perceptible	not perceptible	not perceptible
		Building Damage Potential	extremely low	none	none	none
Drill Rig or Auger	Frequent or Continuous	PPV, in/sec	0.089	0.015	0.006	0.004
		Human Response	distinctly perceptible	barely perceptible	not perceptible	not perceptible
		Building Damage Potential	extremely low	none	none	none
Loaded Truck	Single Event	PPV, in/sec	0.076	0.013	0.005	0.003
		Human Response	barely perceptible	not perceptible	not perceptible	not perceptible
		Building Damage Potential	None	none	none	none
Small Bulldozer	Frequent or Continuous	PPV, in/sec	0.003	0.000	0.000	0.000
		Human Response	not perceptible	not perceptible	not perceptible	not perceptible
		Building Damage Potential	none	none	none	none
Excavator or Backhoe	Frequent or Continuous	PPV, in/sec	0.003	0.000	0.000	0.000
		Human Response	not perceptible	not perceptible	not perceptible	not perceptible
		Building Damage Potential	none	none	none	none
Wheeled Loader	Frequent or Continuous	PPV, in/sec	0.003	0.000	0.000	0.000
		Human Response	not perceptible	not perceptible	not perceptible	not perceptible
		Building Damage Potential	none	none	none	none

PPV = peak particle velocity, inches per second
Human reactions and building damage potential have different thresholds depending on whether the vibration events are isolated discrete events or frequent/continuous events.
Building damage potential is based on cosmetic (not structural) damage to buildings or structures of various types and ages. Building damage categories are:

- Extremely Low = exceeds cosmetic damage threshold for extremely fragile historic buildings, ruins, or monuments
- Very Low = exceeds cosmetic damage threshold for fragile buildings
- Low = exceeds cosmetic damage threshold for historic buildings
- Moderate = exceeds cosmetic damage threshold for older residential buildings
- High = exceeds cosmetic damage threshold for newer residential buildings
- Very High = exceeds cosmetic damage thresholds for modern commercial and industrial buildings.

Source: BLM 2011 – Table 4.10-5.

As demonstrated by the data in Table 4.12-4, ground vibration from most types of equipment used for solar facility construction would not be perceptible at distances of 200 feet or more from operating equipment items. For vibratory pile drivers, ground vibrations would not be

perceptible at distances of 300 feet or more from the operating equipment. Construction activity would not cause perceptible ground vibrations and would pose no risk of cosmetic damage to any existing buildings in the solar facility vicinity.

Indirect Effects

There are no indirect effects related to noise and vibration for construction.

Operation and Maintenance

Noise generated from operations and maintenance of the proposed project would include noise generated by the inverters, substation, switchyard, tracking-system, if used, and gen-tie line; vegetation clearing and weed management activities; and maintenance activities, such as periodic water washes of the panels and road maintenance. Operations and maintenance work would be completed on an as-needed basis, with 8 full-time O&M workers traveling from Palm Springs or from a leased or purchased facility in Desert Center. Facilities would be maintained utilizing 2 small 4-wheel drive vehicles for panel washing and 4 pickup trucks for accessing the site and delivering equipment and crews for maintenance activities. Panel washing would occur no more than three times per year and less frequently over time as soil compaction increases (enXco 2011a – DR#1 Question N-9). On-site vehicle use would be limited to service trucks at not more than 2 hours per day, not more than 20 hours a year for larger vehicles (enXco 2011a – DR#1 Question AR-2). Operation and maintenance of the facility would result in both on-site and off-site noise.

Direct Effects

Solar Facility (Including On-Site Substation)

Noise from Facility Operations. Operational activities at the solar facility site would generate minimal noise. Identifiable sources of noise would include on-site vehicle use for panel-washing, vegetation treatment, delivering equipment and crews for maintenance activities; power conversion station (PCS) equipment; and the on-site substation. There would be limited amounts of vehicle traffic on the site; this vehicle activity would be intermittent and would not be expected to generate off-site noise effects at identified residences.

Inverters and transformers at the PCS would produce low levels of noise during facility operations, but this noise would be limited to daytime hours when the solar arrays are generating electricity. Each PCS would have an inverter located within an enclosure and one transformer, with each array block typically employing two 720 kW inverters. The Applicant is still determining the model of inverters to use but the model would likely be similar to a Xantrex 500-kW model, Satcon 1-MW model, or SMA 720-kW model. Each PCS inverter would generate a noise level of about 80 dBA at a distance of 3.28 feet (1 meter) (enXco 2011a – DR#1 Question N-2) or 74 dBA at a distance of 6.5 feet (2 meters), assuming a reduction of 6 dB per doubling of distance. Based on similar equipment used on the Desert Sunlight Solar Farm Project, this analysis assumes that each PCS inverter would generate a noise level of about 75 dBA at a distance of 10 feet (or a level just slightly higher than that specified by the Applicant), or about 78 dBA at 10 feet for two inverters (BLM 2011). The PCS enclosure would provide 15 to 20 dBA of noise reduction, reducing the inverter noise to 63 dBA at a distance of 10 feet from the enclosure (BLM 2011). The PCS transformers generate a noise level of about 58 dBA at a distance of 6

feet (BLM 2011). For analysis purposes, the overall noise generation from the PCS (inverter housing, air conditioner, and transformer) is estimated to be 65 dBA at a distance of 10 feet (BLM 2011). This noise level would be reduced to 50 dBA at a distance of 56 feet, to 40 dBA at a distance of 178 feet, and to 35 dBA at a distance of 312 feet. The PCS would be centrally located within each array block of solar panels, about 240 to 300 feet from the sides of the array. Thus, the PCS would generate little audible noise beyond the solar facility property line during daytime hours. The PCS would not be a source of noise during nighttime hours. Furthermore, the closest occupied residence is located 6,500 feet from the property line and JTNP is located a minimum of 1.8 miles from the property line such that noise generated by the PCS would not be detectible.

Transformers and related equipment at the on-site substation would be the most important source of operational noise. Similar to the Desert Sunlight Solar Farm Project, transformers at the on-site substation would have cooling fans that operate during daytime hours, but which would not be needed at night when the solar arrays are not generating power. The transformers at the on-site substation are expected to generate noise levels of 89 dBA at a distance of 6 feet during the daytime, and 86 dBA at a distance of 1 foot during nighttime hours (BLM 2011). Daytime noise generation from the on-site substation is expected to be 70.6 dBA at a distance of 50 feet from the substation, 60 dBA at 168 feet, 50 dBA at 521 feet, 45 dBA at 907 feet, and 40 dBA at 1,535 feet (BLM 2011). Nighttime noise generation from the on-site substation is expected to be 52.1 dBA at a distance of 50 feet, 50 dBA at a distance of 64 feet, 40 dBA at a distance of 200 feet, and 35 dBA at a distance of 353 feet (BLM 2011). The on-site substation would be located over 1.25 miles from the closest occupied residence and over 3.5 miles east from JTNP. If gen-tie Alternative E (New Cross-Valley Alignment) were selected with any of the solar facility action alternatives, including Alternative 4, the substation would be located in the southern-middle portion of the site; the closest existing residence would be approximately 2 miles away and JTNP would be approximately 3 miles away. Under either substation location scenario, daytime noise from the on-site substation would generally be well below background noise levels (50-35 dBA) at the closest residence and JTNP (35 dBA performance standard); nighttime noise would also be well below the background noise levels (35-25 dBA) at the closest residence and JTNP (35 dBA performance standard). Furthermore, these noise levels would meet the Riverside County stationary source exterior noise limit of 65 dBA, 10-minute Leq and Riverside County Ordinance No. 847, which limits noise at rural residential properties to 45 dBA Lmax.

Indirect Effects

There are no indirect effects related to noise and vibration for O&M.

Decommissioning

The expected operational life of the proposed project is 30 years. When permanent closure is appropriate, a decommissioning plan would be developed and submitted to the BLM for review and approval. Closure may range from temporary “mothballing” to complete removal of equipment and restoration of the land to BLM approved specifications. The latter of these formulates the basis for the noise analysis for decommissioning.

Direct Effects

Noise from Decommissioning Activities. Decommissioning of the solar facility would require disassembly of mechanical equipment components, demolition of on-site buildings, and removal of perimeter fencing. Many equipment components would include materials that could be recycled, although some materials would probably require disposal in appropriate landfills or other waste disposal areas. It is likely that some type of revegetation program also would be required. Equipment used for decommissioning would generally be similar to that used for construction. Decommissioning activities would likely require less heavy equipment than facility construction, since no vegetation clearing or site grading would be required. Noise effects from decommissioning activities at the solar facility site would be similar to, but probably somewhat less than, those previously estimated for construction activities (see Table 4.12-2, above).

Noise from Traffic Associated with Decommissioning. Traffic volumes associated with decommissioning activities would likely be similar to traffic volumes associated with construction activities. Because decommissioning would occur at least 30 years in the future, it is likely that vehicle engine technology would be different from current technology. Engine technologies that do not rely on internal combustion engines would likely generate lower noise levels than those produced by current vehicles. This effect is already apparent with hybrid vehicles. Consequently, noise effects from traffic associated with decommissioning activities would likely be somewhat less than the noise levels previously estimated for construction-related traffic (see Table 4.12-3, above).

Ground Vibrations from Decommissioning Activity. Ground vibrations generated during solar facility decommissioning would be similar to those previously discussed with respect to construction activities (see Table 4.12-4, above).

Indirect Effects

There are no indirect effects related to noise and vibration for decommissioning.

Mitigation Measures

The following mitigation measure would ensure that on-site Project-related construction activities would be consistent with the Riverside County Noise Ordinance (No. 847) and would not increase ambient noise levels within JTNP boundaries:

MM NOI-1 **Limit Construction Hours When Occurring Near Occupied Residences.** The project owner or its construction contractor shall limit construction activity within a quarter mile of an inhabited dwelling (as identified at the time of construction) to 6:00 a.m. to 6:00 p.m. during June through September and 7:00 a.m. to 6:00 p.m. during October through May to maintain consistency with Riverside County Noise Ordinance No. 847. Certain electrical connection activities at the solar facility site may occur at night for safety reasons; however, no heavy equipment operations would be required for these activities.

MM NOI-2 **No Net Increase in Ambient Noise within JTNP**. The project owner shall ensure that on-site project construction activities do not result in noise levels above 35 dBA Leq (1-hour) within the boundary of JTNP. The project owner shall ensure regular monitoring of noise levels at the Park boundary closest to on-

site project construction activities. If noise levels as a result of on-site project construction exceed 35 dBA Leq (1-hour) within the Park boundary, a noise attenuation barrier shall be erected around the project construction activities to dampen the noise to less than 35 dBA Leq (1-hour) within the Park.

Residual Impacts and Unavoidable Adverse Effects

Implementation of Alternative 4 would result in a substantial increase (>10 dBA) in traffic noise levels above existing ambient noise levels along Kaiser Road north of Lake Tamarisk Road during construction and decommissioning, which would result in a temporary unavoidable adverse effect on occupied residences. No unavoidable adverse vibration effects would occur under Alternative 4.

4.12.7 Alternative 5 – Solar Project Excluding WHMA

Alternative 5 would remain in the same location as Alternative 4 and would use the same project boundaries and access routes as Alternative 4 except that it would exclude the portion of the site which is within the Palen-Ford Wildlife Habitat Management Area (WHMA). The WHMA is located along the northeastern boundary of the project site. No residences are located near this area, such that exclusion of the WHMA does not change the distance of the project components to the closest residence(s).

Direct Effects

Construction

Noise from On-Site Construction Activity. The solar facility under Alternative 5 would be slightly smaller than for Alternative 4 (discussed above in Section 4.12.6), but construction activities would occur on the same schedule as Alternative 4 and would require the same types of equipment. Additionally, the size of the area disturbed on a given day may be slightly smaller under Alternative 5 than Alternative 4. While the total number of some equipment items may be less under Alternative 5 than Alternative 4, similar types and numbers of equipment items would typically be operating in proximity. For noise analysis purposes, it has been assumed that the number and types of equipment operating in proximity at the solar facility under Alternative 5 would be the same as analyzed for Alternative 4.

As indicated previously in Table 4.12-2, daytime construction activity at the solar facility site would not generate significant noise impacts at any nearby occupied residence or within JTNP with implementation of Mitigation Measures NOI-1 and NOI-2.

Noise from Construction-Related Traffic. Alternative 5 would require slightly less construction materials and related truck trips, and possibly fewer construction workers than Alternative 4; however, the difference would be minimal. For the purposes of noise effects analysis, it is assumed that traffic noise generated during construction of the solar facility under Alternative 5 would be identical to Alternative 4 (see Table 4.12-3).

As shown in Table 4.12-3, construction-related traffic would have little noise impact in Desert Center due to the relatively high noise levels generated by existing traffic on I-10. Assuming existing noise levels of 35 dBA at JTNP during daytime hours when the majority of construction

activities would be occurring, the noise level increase within JTNP due to the additional construction traffic along Kaiser Road would be noticeable (a 3-4 dBA increase).

Ground Vibrations from Construction Activity. Ground vibration effects from construction activities for Alternative 5 would be the same as presented previously in connection with Alternative 4.

Indirect Effects

There are no indirect effects related to noise and vibration for construction.

Operation and Maintenance

Direct Effects

Noise from Facility Operations. Operational noise under Alternative 5 would be essentially the same as that discussed for Alternative 4. Noise levels from solar facility operations would be within limits set by the Riverside County noise ordinance, would seldom be audible beyond the property line, and would not be audible at any existing occupied residence or within JTNP.

Indirect Effects

There are no indirect effects related to noise and vibration for O&M.

Decommissioning

Direct Effects

The noise and vibration effects resulting from decommissioning under Alternative 5 would be the same as those discussed under Alternative 4.

Indirect Effects

There are no indirect effects related to noise and vibration for decommissioning.

Mitigation Measures

Applicant measures and mitigation measures for Alternative 5 would be the same as those discussed for Alternative 4 (Mitigation Measures NOI-1 and NOI-2).

Residual Impacts and Unavoidable Adverse Effects

Implementation of Alternative 5 would result in a substantial increase in traffic noise levels above existing ambient noise levels along Kaiser Road north of Lake Tamarisk Road during construction and decommissioning, which would result in a temporary unavoidable adverse effect on occupied residences. No unavoidable adverse vibration effects would occur under Alternative 5.

4.12.8 Alternative 6 – Reduced Footprint Solar Project

Alternative 6 would remain in the same location as Alternative 4 and would use the same project boundaries and access routes as Alternative 4 except that it would exclude a portion of the site which hosts sensitive plant species and the southwestern parcel. There are no residences located near the southwestern parcel (closest residence is located 1.5 miles to the south).

Direct Effects

Construction

Noise from On-Site Construction Activity. Alternative 6 would be smaller in scale than Alternative 4 (and Alternative 5), but construction activities would occur on the same schedule as for Alternative 4 and would require the same types of equipment. The size of the area disturbed on a given day would be smaller under Alternative 6 than under Alternatives 4 and 5. While total numbers of some equipment items would be less under Alternative 6 than under Alternatives 4 or 5, similar types and numbers of equipment items would typically be operating in proximity under Alternatives 4, 5, and 6. For noise analysis purposes, it has been assumed that the number and types of equipment operating in proximity for Alternative 6 would be the same as analyzed for Alternative 4.

As indicated previously in Table 4.12-2, daytime construction activity at the solar facility site would not generate significant noise effects at any nearby occupied residence or within JTNP with implementation of Mitigation Measures NOI-1 and NOI-2.

Noise from Construction-Related Traffic. Alternative 6 would be expected to require less construction material, fewer construction-related truck trips, and slightly fewer construction workers than under Alternatives 4 and 5. As such, construction-related traffic and associated noise effects would be less than that modeled for Alternative 4. As such, noise levels along I-10, SR-177, and Kaiser Road would be less than the noise levels estimated in Table 4.12-3. However, the difference in noise levels is not expected to be substantially lower such that there would continue to be a substantial increase in noise levels for occupied residences resulting from the project along Kaiser Road north of Lake Tamarisk Road. As shown in Table 4.12-3, construction-related traffic would have little noise impact in Desert Center due to the relatively high noise levels generated by existing traffic on I-10. Assuming existing noise levels of 35 dBA at JTNP during daytime hours when the majority of construction activities would be occurring, the noise level increase within JTNP due to the additional construction traffic along Kaiser Road would be noticeable (a 3-4 dBA increase).

Ground Vibrations from Construction Activity. Ground vibration effects from construction activities for Alternative 6 would be the same as presented previously in connection with Alternative 4.

Indirect Effects

There are no indirect effects related to noise and vibration for construction.

Operation and Maintenance

Direct Effects

Noise from Facility Operations. Operational noise under Alternative 6 would be essentially the same as that discussed for Alternative 4. Noise levels from solar facility operations would be within limits set by the Riverside County noise ordinance, would seldom be audible beyond the property line, and would not be audible at any existing occupied residence or within JTNP.

Indirect Effects

There are no indirect effects related to noise and vibration for O&M.

Decommissioning

Direct Effects

The noise and vibration effects resulting from decommissioning under Alternative 6 would be the same as those discussed under Alternative 4.

Indirect Effects

There are no indirect effects related to noise and vibration for decommissioning.

Mitigation Measures

Applicant measures and mitigation measures for Alternative 6 would be the same as those discussed for Alternative 4 (Mitigation Measures NOI-1 and NOI-2).

Residual Impacts and Unavoidable Adverse Effects

Implementation of Alternative 6 would result in a substantial increase in traffic noise levels above existing ambient noise levels along Kaiser Road north of Lake Tamarisk Road during construction and decommissioning, which would result in a temporary unavoidable adverse effect on occupied residences. No unavoidable adverse vibration effects would occur under Alternative 6.

4.12.9 Alternative 7 – High-Profile Reduced Footprint Solar Project

Alternative 7 would be constructed within the same project boundaries as Alternative 6. Alternative 7 would encompass an estimated 1,044 acres and would be an estimated 150 MW nominal capacity project. Project details are the same as for Alternative 4, with the only exception being the overall height of the panels for Alternative 7. Alternative 7 would use high-profile single-axis tracking panels that would have a total height of 15 feet. Alternative 7 would exclude the same portion of the site as Alternative 6. There are no residences located near the southwestern parcel (closest residence is located 1.5 miles to the south).

Direct Effects

Construction

Noise from On-Site Construction Activity. Alternative 7 would be smaller in scale than Alternative 4 (and Alternative 5), but construction activities would occur on the same schedule as for Alternative 4 and would require the same types of equipment. The size of the area disturbed on a given day would be smaller under Alternative 7 than under Alternatives 4 and 5. While total numbers of some equipment items would be less under Alternative 7 than under Alternatives 4 or 5, similar types and numbers of equipment items would typically be operating in proximity under Alternatives 4, 5, and 7. For noise analysis purposes, it has been assumed that the number and types of equipment operating in proximity for Alternative 7 would be the same as analyzed for Alternative 4.

As indicated previously in Table 4.12-2, daytime construction activity at the solar facility site would not generate significant noise effects at any nearby occupied residence or within JTNP with implementation of Mitigation Measures NOI-1 and NOI-2.

Noise from Construction-Related Traffic. Alternative 7 would be expected to require less construction material, fewer construction-related truck trips, and slightly fewer construction workers than under Alternatives 4 and 5. As such, construction-related traffic and associated noise effects would be less than that modeled for Alternative 4. As such, noise levels along I-10, SR-177, and Kaiser Road would be less than the noise levels estimated in Table 4.12-3. However, the difference in noise levels is not expected to be substantially lower such that there would continue to be a substantial increase in noise levels for occupied residences resulting from the project along Kaiser Road north of Lake Tamarisk Road. As shown in Table 4.12-3, construction-related traffic would have little noise impact in Desert Center due to the relatively high noise levels generated by existing traffic on I-10. Assuming existing noise levels of 35 dBA at JTNP during daytime hours when the majority of construction activities would be occurring, the noise level increase within JTNP due to the additional construction traffic along Kaiser Road would be noticeable (a 3-4 dBA increase).

Ground Vibrations from Construction Activity. Ground vibration effects from construction activities for Alternative 7 would be the same as presented previously in connection with Alternative 4.

Indirect Effects

There are no indirect effects related to noise and vibration for construction.

Operation and Maintenance

Direct Effects

Noise from Facility Operations. Operational noise under Alternative 7 would be essentially the same as that discussed for Alternative 4. Noise levels from solar facility operations would be within limits set by the Riverside County noise ordinance, would seldom be audible beyond the property line, and would not be audible at any existing occupied residence or within JTNP.

Indirect Effects

There are no indirect effects related to noise and vibration for O&M.

Decommissioning

Direct Effects

The noise and vibration effects resulting from decommissioning under Alternative 7 would be the same as those discussed under Alternative 4.

Indirect Effects

There are no indirect effects related to noise and vibration for decommissioning.

Mitigation Measures

Applicant measures and mitigation measures for Alternative 7 would be the same as those discussed for Alternative 4 (Mitigation Measures NOI-1 and NOI-2).

Residual Impacts and Unavoidable Adverse Effects

Implementation of Alternative 7 would result in a substantial increase in traffic noise levels above existing ambient noise levels along Kaiser Road north of Lake Tamarisk Road during construction and decommissioning, which would result in a temporary unavoidable adverse effect on occupied residences. No unavoidable adverse vibration effects would occur under Alternative 7.

4.12.10 Alternative A – No Gen-Tie

Under Alternative A, no gen-tie line would be constructed or operated as part of the DHSP. Therefore, no noise or vibration effects related to construction, operations and maintenance, or decommissioning would occur.

4.12.11 Alternative B – Proposed Gen-Tie (Shared Towers)

Alternative B would utilize transmission infrastructure developed for First Solar's Desert Sunlight Solar Farm Project by sharing the approved transmission towers. Stringing of the project owner's gen-tie line would occur concurrently with construction of First Solar Desert Sunlight Solar Farm Project's gen-tie line. However, since this construction had not yet begun as of September 2011, this analysis assumes that Alternative B would require all related construction activities, including tower installation.

Direct Effects

Construction

Noise from On-Site Construction Activities. The Alternative B gen-tie line would be identical to the gen-tie line for the Desert Sunlight Solar Farm Project and the same number of towers would be constructed (73 transmission structures, including 65 tangents and 8 dead-ends, with 5 splicing locations and 20 guard structures). As such, construction of the Alternative B gen-tie line would result in identical noise levels as were estimated for the Desert Sunlight Solar Farm Project. For the transmission line, four of six construction phases were selected for noise analysis (BLM 2011):

- Site preparation;
- Tower foundations
- Tower assembly and erection; and
- Power line stringing.

The remaining two construction phases (testing and site cleanup) would have limited heavy equipment use, and would generate lower noise levels than these phases. Not all equipment items would operate concurrently, but several items of equipment would typically be active over a construction day. Equipment items that would typically be operating in proximity were identified and used in the construction noise analyses. Construction activity would generally occur over a standard five-day workweek (Monday through Friday) with activity limited to daytime

hours when located near inhabited dwellings pursuant to Mitigation Measure NOI-1 and consistent with the Riverside County noise ordinance (beginning at 7:00 a.m. during most of the year, and perhaps starting as early as 6:00 a.m. during the summer months, and ending no later than 6:00 p.m.). Table 4.12-5 summarizes the construction noise analysis results for the five construction phases with the greatest noise generation for the Alternative B gen-tie line.

Table 4.12-5. Summary of Construction Noise for the Gen-Tie Line (Alternative B)

Construction Phase	Typical Equipment	Distance from Construction (feet)	Maximum 1-Hour Leq Increment (dBA)	Average Daytime Leq Increment (dBA)	CNEL Increment (dBA)
Site Preparation	Tracked Dozer, Grader, Roller-Compactor, Wheeled Loader, Dump Truck, Water Truck	100	80.3	78.1	75.0
		200	74.1	71.8	68.8
		300	70.3	68.1	65.1
		500	65.5	63.2	60.2
		700	62.1	59.9	56.9
		1,000	58.4	56.1	53.1
Tower Foundations	Tracked Dozer, Wheeled Loader, Backhoe, Auger Rig, Drill Rig, Compressor, Pump, Jackhammer, Portable Mixer, Forklift, Mobile Crane, Dump Trick, Cement Mixer Truck, Specialty Trucks, Water Truck	100	84.3	79.8	76.8
		200	78.0	73.6	70.6
		300	74.2	69.9	66.9
		500	69.3	65.0	62.0
		700	65.9	61.7	58.7
		1,000	62.1	58.0	55.0
Tower Assembly and Erection	Portable Compressor, Forklift, Mobile Crane, Water Truck, Flatbed Truck	100	81.9	78.0	75.0
		200	75.7	71.9	68.8
		300	72.0	68.2	65.2
		500	67.3	63.4	60.4
		700	64.0	60.2	57.2
		1,000	60.4	56.6	53.6
Power Line Stringing	Tracked Dozer, Backhoe, Portable Compressor, Line Puller, Specialty Trucks, Truck Tractor, Water Truck	100	78.9	75.6	72.6
		200	72.7	69.4	66.4
		300	69.0	65.7	62.7
		500	64.3	61.0	57.9
		700	61.0	57.7	54.7
		1,000	57.4	54.1	51.1

Leq = equivalent continuous noise level
CNEL = community noise equivalent level (a 24-hour weighted average)
Source: BLM 2011 – Table 4.10-6.

The Alternative B gen-tie line would be located on the west side of Kaiser Road from the solar facility site to a location south of the Tamarisk Lake development. There are some rural residences in addition to the Tamarisk Lake development along that part of the transmission line corridor (refer to Figure 3.12-1 in the Noise section of Chapter 3). Based on aerial photographs, the closest homes appear to be about 500 feet from the transmission line corridor. JTNP is located approximately 3.4 miles west of the Alternative B gen-tie alignment, which parallels

Kaiser Road. The four construction phases evaluated above would last about twelve months. During that time, construction activity would advance in a linear fashion along the 12.1-mile transmission line corridor. Consequently, construction activity would be near any given location for only a few weeks of the overall construction period.

As indicated in Table 4.12-6, daytime construction activity along the transmission line corridor would be a temporary but noticeable noise source for locations within about 1,000 feet of the active construction area. CNEL increments at the homes closest to the transmission line corridor (distance of 500 feet) would temporarily reach about 62 dBA during tower foundation construction, with maximum 1-hour Leq noise levels of about 69 dBA. CNEL increments would temporarily exceed Riverside County's normally acceptable limit for rural residential land uses, but would remain within the conditionally acceptable range. Implementation of Mitigation Measure NOI-1 would maintain consistency with the Riverside County noise ordinance by limiting construction to the exempted hours (beginning at 7:00 a.m. during most of the year, and starting as early as 6:00 a.m. during the summer months, and ending no later than 6:00 p.m.).

Ambient noise levels within JTNP are expected to be 35 dBA or less, and the NPS has provided a performance standard for noise mitigation limiting noise levels at the Park boundary from the project to 35 dBA. Implementation of Mitigation Measure NOI-2 would require the on-site construction activities to be monitored and controlled so that they do not cause noise levels above 35 dBA at the boundary to JTNP.

Noise from Construction-Related Traffic. Noise from construction-related traffic for the solar facility site, including the gen-tie line, was presented previously in Table 4.10-3. Construction-related traffic would have little noise impact in Desert Center due to the relatively high noise levels generated by existing traffic on I-10. Most people cannot detect noise level changes of less than 1.5 to 2 dBA, but find noise level changes of 3 to 5 dBA to be noticeable, and find noise level changes of 5 dBA or more to be obvious. The changes in CNEL and 1-hour Leq noise levels in the Desert Center area would not be noticeable. At greater distances from I-10, noise from construction-related traffic would have a greater influence on overall traffic noise conditions. Along SR-177 south of Kaiser Road, the increase in noise generated by construction traffic would be less than 1 dBA and not noticeable. Along Kaiser Road south of Lake Tamarisk Road there would be a noticeable increase in traffic noise levels (3-4 dBA increase) and north of Lake Tamarisk Road noise levels would substantially increase (>10 dBA increase). At 50 feet from the centerline of Kaiser Road, CNEL levels would be within Riverside County's conditionally acceptable range for rural residential land uses (Table 3.12-2; 55-70 dBA CNEL) and at 180 feet back within the normally acceptable range for rural residential land uses (Table 3.12-2; up to 60 dBA CNEL). Assuming noise levels of 35 dBA at JTNP during daytime hours when the majority of construction activities would be occurring, the noise level increase within JTNP due to additional construction traffic along Kaiser Road would be noticeable (a 3-4 dBA increase).

Ground Vibrations from Construction Activities. Ground vibration effects from construction of the gen-tie line under Alternative B were assessed using the same procedures as discussed previously for the solar facility site. Table 4.12-6 summarizes the ground vibration analysis for construction of gen-tie line.

Table 4.12-6. Ground Vibration Levels for Typical Equipment Used for Gen-Tie Line Construction

Equipment Type	Vibratory Type	Parameter	Distance from Operating Equipment Item			
			25 feet	100 feet	200 feet	300 feet
Static Roller-Compactor	Frequent or Continuous	PPV, in/sec	0.089	0.015	0.006	0.004
		Human Response	distinctly perceptible	barely perceptible	not perceptible	not perceptible
		Building Damage Potential	extremely low	none	none	none
Self-Loading Scraper	Frequent or Continuous	PPV, in/sec	0.089	0.015	0.006	0.004
		Human Response	distinctly perceptible	barely perceptible	not perceptible	not perceptible
		Building Damage Potential	extremely low	none	none	none
Large Bulldozer	Frequent or Continuous	PPV, in/sec	0.089	0.015	0.006	0.004
		Human Response	distinctly perceptible	barely perceptible	not perceptible	not perceptible
		Building Damage Potential	extremely low	none	none	none
Drill Rig or Auger	Frequent or Continuous	PPV, in/sec	0.089	0.015	0.006	0.004
		Human Response	distinctly perceptible	barely perceptible	not perceptible	not perceptible
		Building Damage Potential	extremely low	none	none	none
Loaded Truck	Single Event	PPV, in/sec	0.076	0.013	0.005	0.003
		Human Response	barely perceptible	not perceptible	not perceptible	not perceptible
		Building Damage Potential	none	none	none	none
Jackhammer	Frequent or Continuous	PPV, in/sec	0.035	0.006	0.002	0.001
		Human Response	barely perceptible	not perceptible	not perceptible	not perceptible
		Building Damage Potential	none	none	none	none
Small Bulldozer	Frequent or Continuous	PPV, in/sec	0.003	0.000	0.000	0.000
		Human Response	not perceptible	not perceptible	not perceptible	not perceptible
		Building Damage Potential	none	none	none	none
Excavator or Backhoe	Frequent or Continuous	PPV, in/sec	0.003	0.000	0.000	0.000
		Human Response	not perceptible	not perceptible	not perceptible	not perceptible
		Building Damage Potential	none	none	none	none
Wheeled Loader	Frequent or Continuous	PPV, in/sec	0.003	0.000	0.000	0.000
		Human Response	not perceptible	not perceptible	not perceptible	not perceptible

Table 4.12-6. Ground Vibration Levels for Typical Equipment Used for Gen-Tie Line Construction

Equipment Type	Vibratory Type	Parameter	Distance from Operating Equipment Item			
			25 feet	100 feet	200 feet	300 feet
		Building Damage Potential	none	none	none	none

PPV = peak particle velocity, inches per second
Human reactions and building damage potential have different thresholds depending on whether the vibration events are isolated discrete events or frequent/continuous events.
Building damage potential is based on cosmetic (not structural) damage to buildings or structures of various types and ages. Building damage categories are:

- Extremely Low = exceeds cosmetic damage threshold for extremely fragile historic buildings, ruins, or monuments
- Very Low = exceeds cosmetic damage threshold for fragile buildings
- Low = exceeds cosmetic damage threshold for historic buildings
- Moderate = exceeds cosmetic damage threshold for older residential buildings
- High = exceeds cosmetic damage threshold for newer residential buildings
- Very High = exceeds cosmetic damage thresholds for modern commercial and industrial buildings.

Source: BLM 2011 – Table 4.10-7.

As demonstrated by the data in Table 4.12-6, ground vibration from most types of construction equipment used for gen-tie line construction would not be perceptible at distances of 200 feet or more from operating equipment items. Gen-tie line construction activity would not cause perceptible ground vibrations and would pose no risk of cosmetic damage to any existing buildings along the transmission line corridor.

Indirect Effects

There are no indirect effects related to noise and vibration for construction.

Operation and Maintenance

Direct Effects

Noise from Facility Operations. The gen-tie line would have no persistent operational noise generation, with the exception of corona noise, as routine transmission line inspection and maintenance activities would occur on an as needed basis. Southern California Edison has estimated corona discharge noise from 230 kV transmission lines at 50 dBA at the edge of the transmission line ROW (CPUC 2006). Ambient noise levels during rainstorms often exceed this noise level, especially if the rain is accompanied by high winds.

Indirect Effects

There are no indirect effects related to noise and vibration for O&M.

Decommissioning

Direct Effects

Noise from Decommissioning Activities. Decommissioning of the gen-tie line under Alternative B would require removal of the transmission cables, removal of the transmission towers and footings, filling of tower footing excavations, and perhaps a limited amount of revegetation along the transmission line corridor. Equipment used for decommissioning would generally be similar to that used for construction. Noise effects from decommissioning activities for the gen-

tie line would be similar to, but probably somewhat less than, those previously estimated for construction activities (see Table 4.12-5, above).

Noise from Traffic Associated with Decommissioning. Traffic volumes associated with decommissioning activities would likely be similar to traffic volumes associated with construction activities. Because decommissioning would occur at least 30 years in the future, it is likely that vehicle engine technology would be different from current technology. Engine technologies that do not rely on internal combustion engines would likely generate lower noise levels than those produced by current vehicles. This effect is already apparent with hybrid vehicles. Consequently, noise effects from traffic associated with decommissioning activities would likely be somewhat less than the noise levels previously estimated for construction-related traffic (see Table 4.12-3, above).

Ground Vibrations from Decommissioning Activity. Ground vibrations generated during decommissioning of gen-tie line would be similar to those previously discussed with respect to construction activities (see Table 4.12-6, above).

Indirect Effects

There are no indirect effects related to noise and vibration for decommissioning.

Mitigation Measures

Mitigation Measures NOI-1 and NOI-2, presented under Alternative 4, would ensure compliance with the Riverside County's noise ordinance and ensure no increase in ambient noise levels within JTNP boundaries from on-site construction activities. No additional mitigation is necessary.

Residual Impacts and Unavoidable Adverse Effects

Implementation of Alternative B, when considering both the solar facility and the gen-tie line, would result in a substantial increase in traffic noise levels above existing ambient noise levels along Kaiser Road north of Lake Tamarisk Road during construction and decommissioning, which would result in a temporary unavoidable adverse effect. No unavoidable adverse vibration effects would occur under Alternative B.

4.12.12 Alternative C – Separate Transmission Towers within Same ROW

The Alternative C gen-tie line would parallel the approved Desert Sunlight gen-tie line, and would be located on separate towers within the same ROW. The same number of towers in a nearly identical alignment to that of First Solar's towers would be constructed.

Direct Effects

Construction activity noise and vibration estimates presented previously for the gen-tie line under Alternative B would apply equally to construction activity under Alternative C because the Alternative C gen-tie line would parallel the approved Desert Sunlight gen-tie line and would require the same number of towers in a nearly identical alignment. However, under Alternative C the closest residence would be located slightly farther away than under Alternative B (600 feet vs. 500 feet). Therefore, noise and vibration effects resulting from the construction of the gen-tie line under Alternative C would be slightly reduced compared to those described under Alternative B.

Indirect Effects

There are no indirect effects related to noise and vibration for construction.

Operation and Maintenance

Direct Effects

Noise from Facility Operations. As discussed above for Alternative B, the gen-tie line would have no persistent operational noise generation, with the exception of corona noise, as routine transmission line inspection and maintenance activities would occur on an as needed basis. Southern California Edison has estimated corona discharge noise from 230 kV transmission lines at 50 dBA at the edge of the transmission line ROW (CPUC 2006). Ambient noise levels during rainstorms often exceed this noise level, especially if the rain is accompanied by high winds. However, noise generated by rain and wind would likely mask corona noise generated by the transmission line.

Indirect Effects

There are no indirect effects related to noise and vibration for O&M.

Decommissioning

Direct Effects

Noise from Decommissioning Activities. Decommissioning of the gen-tie line under Alternative C would be identical to Alternative B. Noise effects from decommissioning activities for the gen-tie line would be similar to, but probably somewhat less than, those previously estimated for construction activities (see Table 4.12-5, above).

Noise from Traffic Associated with Decommissioning. Traffic volumes associated with decommissioning activities would likely be similar to traffic volumes associated with construction activities. Because decommissioning would occur at least 30 years in the future, it is likely that vehicle engine technology would be different from current technology. Engine technologies that do not rely on internal combustion engines would likely generate lower noise levels than those produced by current vehicles. This effect is already apparent with hybrid vehicles. Consequently, noise effects from traffic associated with decommissioning activities would likely be somewhat less than the noise levels previously estimated for construction-related traffic (see Table 4.12-3, above).

Ground Vibrations from Decommissioning Activity. Ground vibrations generated during decommissioning of gen-tie line would be similar to those previously discussed with respect to construction activities (see Table 4.12-6, above).

Indirect Effects

There are no indirect effects related to noise and vibration for decommissioning.

Mitigation Measures

Mitigation Measures NOI-1 and NOI-2, presented under Alternative 4, would ensure compliance with the Riverside County's noise ordinance and ensure no increase in ambient noise levels

within JTNP boundaries from on-site construction activities. No additional mitigation is necessary.

Residual Impacts and Unavoidable Adverse Effects

Implementation of Alternative C, when considering both the solar facility and the gen-tie line, would result in a substantial increase in traffic noise levels above existing ambient noise levels along Kaiser Road north of Lake Tamarisk Road during construction and decommissioning, which would result in a temporary unavoidable adverse effect. No unavoidable adverse vibration effects would occur under Alternative C.

4.12.13 Alternative D – Cross-Valley Alignment

Construction, operation, and maintenance of the gen-tie line under Alternative D would be identical to that described for Alternative B, except it would require slightly less temporary and permanent ground disturbance. However, because it would require new access routes for the transmission line, Alternative D would require about 3,700 cubic yards of aggregate.

Construction

Direct Effects

Construction activity noise and vibration estimates presented previously for the gen-tie line under Alternative B would apply equally to construction activity under Alternative D. However, under Alternative D the closest residence would be located farther away than under Alternative B (1,450 feet vs. 500 feet). Therefore, noise and vibration effects resulting from the construction of the gen-tie line under Alternative D would be slightly reduced compared to those described under Alternative B.

Indirect Effects

There are no indirect effects related to noise and vibration for construction.

Operation and Maintenance

Direct Effects

Noise from Facility Operations. As discussed above for Alternative B, the gen-tie line would have no persistent operational noise generation, with the exception of corona noise, as routine transmission line inspection and maintenance activities would occur on an as needed basis. Southern California Edison has estimated corona discharge noise from 230 kV transmission lines at 50 dBA at the edge of the transmission line ROW (CPUC 2006). Ambient noise levels during rainstorms often exceed this noise level, especially if the rain is accompanied by high winds. However, noise generated by rain and wind would likely mask corona noise generated by the transmission line.

Indirect Effects

There are no indirect effects related to noise and vibration for O&M.

Decommissioning

Direct Effects

Noise from Decommissioning Activities. Decommissioning of the gen-tie line under Alternative D would be identical to Alternative B. Noise effects from decommissioning activities for the gen-tie line would be similar to, but probably somewhat less than, those previously estimated for construction activities (see Table 4.12-5, above).

Noise from Traffic Associated with Decommissioning. Traffic volumes associated with decommissioning activities would likely be similar to traffic volumes associated with construction activities. Because decommissioning would occur at least 30 years in the future, it is likely that vehicle engine technology would be different from current technology. Engine technologies that do not rely on internal combustion engines would likely generate lower noise levels than those produced by current vehicles. This effect is already apparent with hybrid vehicles. Consequently, noise effects from traffic associated with decommissioning activities would likely be somewhat less than the noise levels previously estimated for construction-related traffic (see Table 4.12-3, above).

Ground Vibrations from Decommissioning Activity. Ground vibrations generated during decommissioning of gen-tie line would be similar to those previously discussed with respect to construction activities (see Table 4.12-6, above).

Indirect Effects

There are no indirect effects related to noise and vibration for decommissioning.

Mitigation Measures

Mitigation Measures NOI-1 and NOI-2, presented under Alternative 4, would ensure compliance with the Riverside County's noise ordinance and ensure no increase in ambient noise levels within JTNP boundaries from on-site construction activities. No additional mitigation is necessary.

Residual Impacts and Unavoidable Adverse Effects

Implementation of Alternative D, when considering both the solar facility and the gen-tie line, would result in a substantial increase in traffic noise levels above existing ambient noise levels along Kaiser Road north of Lake Tamarisk Road during construction and decommissioning, which would result in a temporary unavoidable adverse effect. No unavoidable adverse vibration effects would occur under Alternative D.

4.12.14 Alternative E – New Cross-Valley Alignment

Construction, operation, and maintenance of Alternative E would be identical to that described for Alternative B, except for it would require slightly less temporary and permanent ground disturbance. However, because it would require new access routes for the transmission line, Alternative E would require about 3,700 cubic yards of aggregate.

Construction

Direct Effects

Construction activity noise and vibration estimates presented previously for the gen-tie line under Alternative B would apply equally to construction activity under Alternative E. However, under Alternative E the closest residence would be located farther away than under Alternative B (900 feet vs. 500 feet). Therefore, noise and vibration effects resulting from the construction of the gen-tie line under Alternative E would be slightly reduced compared to those described under Alternative B.

Indirect Effects

There are no indirect effects related to noise and vibration for construction.

Operation and Maintenance

Direct Effects

Noise from Facility Operations. As discussed above for Alternative B, the gen-tie line would have no persistent operational noise generation, with the exception of corona noise, as routine transmission line inspection and maintenance activities would occur on an as needed basis. Southern California Edison has estimated corona discharge noise from 230 kV transmission lines at 50 dBA at the edge of the transmission line ROW (CPUC 2006). Ambient noise levels during rainstorms often exceed this noise level, especially if the rain is accompanied by high winds. However, noise generated by rain and wind would likely mask corona noise generated by the transmission line.

Indirect Effects

There are no indirect effects related to noise and vibration for O&M.

Decommissioning

Direct Effects

Noise from Decommissioning Activities. Decommissioning of the gen-tie line under Alternative E would be identical to Alternative B. Noise effects from decommissioning activities for the gen-tie line would be similar to, but probably somewhat less than, those previously estimated for construction activities (see Table 4.12-5, above).

Noise from Traffic Associated with Decommissioning. Traffic volumes associated with decommissioning activities would likely be similar to traffic volumes associated with construction activities. Because decommissioning would occur at least 30 years in the future, it is likely that vehicle engine technology would be different from current technology. Engine technologies that do not rely on internal combustion engines would likely generate lower noise levels than those produced by current vehicles. This effect is already apparent with hybrid vehicles. Consequently, noise effects from traffic associated with decommissioning activities would likely be somewhat less than the noise levels previously estimated for construction-related traffic (see Table 4.12-3, above).

Ground Vibrations from Decommissioning Activity. Ground vibrations generated during decommissioning of gen-tie line would be similar to those previously discussed with respect to construction activities (see Table 4.12-6, above).

Indirect Effects

There are no indirect effects related to noise and vibration for decommissioning.

Mitigation Measures

Mitigation Measures NOI-1 and NOI-2, presented under Alternative 4, would ensure compliance with the Riverside County's noise ordinance and ensure no increase in ambient noise levels within JTNP boundaries from on-site construction activities. No additional mitigation is necessary.

Residual Impacts and Unavoidable Adverse Effects

Implementation of Alternative E, when considering both the solar facility and the gen-tie line, would result in a substantial increase in traffic noise levels above existing ambient noise levels along Kaiser Road north of Lake Tamarisk during construction and decommissioning, which would result in a temporary unavoidable adverse effect. No unavoidable adverse vibration effects would occur under Alternative E.

4.12.15 Cumulative Effects

Cumulative noise or vibration effects would occur when multiple projects affect the same geographic areas at the same time or when sequential projects extend the duration of noise or vibration effects on a given area over a longer period of time. The factors of geographic scope and time frame for noise and vibration effects are shown in Table 4.12-7 and discussed below.

Table 4.12-7. Cumulative Projects within the Geographic Scope of Cumulative Analysis

Resource Area / BLM Program Area	Geographic Area of Consideration	Elements to Consider	BLM Authorized and Other Known County Projects/Actions/Activities
Noise and Vibration	0.5 mile from the area of noise generation.	Additive construction equipment noise	• Desert Sunlight Solar Farm Project • Silverado Power Solar Project • Desert Sunlight transmission line (Alternatives B and C) • Desert Center 50 Solar Project (Alternatives D) • Red Bluff Substation (Alternatives B through E) • I-10 (Alternatives B through E)

Geographic Scope

Noise. The noise effects of the proposed project and alternatives stem primarily from temporary construction activities. Because noise levels decline rapidly with distance from the noise source, the geographic scope of noise effects is limited to local areas. As demonstrated by the construction noise and traffic noise analyses presented previously, the geographic scope of potentially significant noise effects seldom extends more than 2,500 feet (0.5 mile) from the area of noise generation.

Vibration. The ground vibration effects of the proposed project and alternatives stem primarily from temporary construction activities. Ground vibrations dissipate more rapidly than airborne noise levels, limiting the geographic scope of ground vibration effects to the immediate vicinity of the vibration source. As demonstrated by the ground vibration analyses presented previously, the geographic scope of potentially significant ground vibrations extends no more than a few hundred feet from the source of the vibrations.

Cumulative Effects Analysis

There would be no cumulative noise or vibration effects under the No Action and No Project Alternatives (Alternatives 1, 2, 3, and A) because the solar project (solar facility and gen-tie line) would not be constructed. Any future proposals for use of the site would be subject to separate environmental review. Alternative B would not contribute to cumulative noise effects, as the cumulative scenario assumes concurrent construction of the Desert Sunlight approved gen-tie and Alternative B conductor stringing using the same crew at the same time, with no additional work required for Alternative B beyond what is required for the Desert Sunlight gen-tie.

Current ambient noise conditions represent the cumulative effect of noise generation on a local geographic scale. Except for the I-10 vicinity, existing noise levels in the immediate project vicinity are generally low. There are no known existing ground vibration issues in the project study area. Existing and foreseeable projects and facilities listed in Tables 4.1-1 and 4.1-2 are too far from the proposed solar facility area to create cumulative noise effects in combination with any of the solar facility action alternatives (Alternatives 4 through 7), with the exception of the Desert Sunlight Solar Farm Project (on-site and off-site impacts) located immediately adjacent to and north of the solar facility site and the Silverado Power Solar Project located one mile south of the solar facility site (off-site impacts only, as site is located outside geographic area considered for cumulative noise impacts). Alternative C would have the potential for cumulative site-related noise effects in combination with the Desert Sunlight transmission line, as C would use the same or a slightly wider ROW along the same route. Alternative D would pass through the Silverado Power Solar Project and the Desert Center 50 Solar Project sites. All gen-tie line alternatives (Alternatives C through E) connect to the Red Bluff Substation, which is associated with the Desert Sunlight Solar Farm Project. As such, these gen-tie line alternatives have the potential for cumulative site-related noise effects in combination with other projects occurring in the project vicinity.

Alternatives C through E all cross I-10 prior to entering the Red Bluff Substation, which is situated just south of I-10. Because there are no noise-sensitive receptors located close to the Red Bluff Substation, cumulative noise and vibration effects from the Red Bluff Substation in combination with gen-tie line construction activities and existing I-10 traffic would result in a minor noise effect. Furthermore, for the Desert Sunlight Project it was determined that construction of the solar facility, gen-tie line, and Red Bluff Substation would increase traffic volumes on I-10 by less than one percent, resulting in a cumulative CNEL increase of about 0.04 dBA (BLM 2011). Similarly, the DHSP solar facility and gen-tie line would have little effect on traffic noise along the I-10 (see Table 4.12-3). Thus, cumulative noise effects related to Alternatives C through E would not be substantial near the Red Bluff Substation. Again, Alternative B would not contribute to cumulative noise effects.

On-site cumulative noise effects would have the potential to occur as a result of the construction if the Desert Sunlight Solar Farm project were to occur at the same time as the DHSP. The construction for the Desert Sunlight Solar Farm Project began in September 2011 with full commercial operation expected by the first quarter of 2015 (First Solar 2011). This schedule would coincide with the DHSP construction. As such, both on-site and off-site (traffic noise) cumulative effects could occur. For on-site noise, the closest receptor to both projects is located 3,600 feet (0.68 mile) west from the Desert Sunlight Solar Farm project area and 8,300 feet (1.6 miles) northwest from the DHSP solar facility. As shown in Table 4.12-2, construction noise during the loudest phase of construction (array post installation) would result in noise levels of 51 dBA Lmax (1 hour) and a CNEL level of 46 dBA at 2,500 feet. At 5,000 feet (one doubling of distance), these noise levels would drop by 6 dB (per the fundamentals of stationary noise sources). The contribution from the DHSP by the time it reaches the closest receptor to both Desert Sunlight Solar Farm Project and DHSP (8,300 feet away) would be about 41 dBA Leq (1-hour maximum) and 36 dBA CNEL. If construction (array post installation) were to be occurring in the western portion of the Desert Sunlight Solar Farm project area at the same time as construction (array post installation) is occurring in the northwestern portion of the DHSP solar facility site, construction noise levels would then have the potential to combine. The Desert Sunlight Solar Farm project was estimated to result in noise levels of 48 dBA Leq (1 hour maximum) and less than 43 dBA CNEL at this same receptor. The combined effect of these two projects, under a conservative scenario, would increase noise levels by less than one decibel which would not be noticeable and not cumulatively substantial. Construction noise levels would remain within Riverside County's normally acceptable range for rural residential land uses (Table 3.12-2; up to 60 dBA CNEL). Furthermore, when construction is occurring within a quarter mile of an occupied residence (as identified at the time of construction) the hours of such activities would be limited through mitigation (Mitigation Measure NOI-1) such that noise standards established in local noise ordinances, specifically Riverside County Noise Ordinance No. 847, would be not be exceeded. In addition, noise levels within JTNP from on-site construction activities would be monitored and controlled so that cumulative noise levels remain at or below 35 dBA with implementation of Mitigation Measure NOI-2, thereby meeting the Park's stated goal of encouraging no increase in ambient noise levels within the Park from construction activities outside the Park.

Off-site cumulative noise effects would have the potential to occur as a result of the construction of the Desert Sunlight Solar Farm project and/or Silverado Power Solar Project if they were to occur at the same time as the DHSP. However, given its permitting status (notice of intent to prepare an EIR not yet released by the County, CEQANet 2012; and a plan of development not yet submitted to BLM for any gen-tie alignment) construction of the Silverado Power Solar Project is not anticipated to begin until 2015 or later and therefore, construction activities would not occur at the same time as the DHSP. For the Desert Sunlight Solar Farm project and the DHSP, construction traffic would be generated along I-10, SR-177 and Kaiser Road. Because construction of these two projects would be occurring at the same time, cumulative traffic noise effects could occur. Existing traffic volumes on I-10 (currently 21,000 to 23,000 vehicles per day with 40 percent truck traffic) would need to be doubled to cause even a 3 dBA increase in noise levels, which would not occur as a result of these two projects. Both individually and cumulatively the increase in traffic volume from these projects would have a negligible effect on traffic noise levels along I-10; therefore, cumulative effects would not be substantial.

Cumulative traffic noise along SR-177 and Kaiser Road in the Lake Tamarisk area were estimated, as shown in Table 4.12-8.

Table 4.12-8. Modeled 1-Hour Leq/CNEL Noise Levels from Cumulative Construction Traffic

Traffic Noise Source	Distance from Road Centerline (feet)	Existing 1-Hour Leq / CNEL (dBA)	Existing + Proposed Project + Desert Sunlight 1-Hour Leq / CNEL (dBA)	Change from Existing 1-Hour Leq / CNEL (dBA)
SR-177 South of Kaiser Road	50	70.9 / 72.0	71.6 / 73.0	0.7 / 1.0
	100	67.8 / 68.9	68.5 / 69.9	0.7 / 1.0
	250	63.8 / 64.9	64.5 / 65.9	0.7 / 1.0
	500	60.8 / 61.9	61.5 / 62.9	0.7 / 1.0
	750	59.1 / 60.1	59.8 / 61.	0.7 / 1.1
	1,000	57.8 / 58.9	58.5 / 59.9	0.7 / 1.0
Kaiser Road South of Lake Tamarisk	50	61.9 / 62.2	66.0 / 67.5	4.1 / 5.3
	100	58.8 / 59.1	62.9 / 64.4	4.1 / 5.3
	250	54.9 / 55.1	58.9 / 60.4	4.0 / 5.3
	500	51.8 / 52.1	55.9 / 57.4	4.1 / 5.3
	750	50.1 / 50.3	54.1 / 55.6	4.0 / 5.3
	1,000	48.8 / 49.1	52.9 / 54.4	4.1 / 5.3
Kaiser Road North of Lake Tamarisk	50	52.4 / 52.3	64.0 / 66.0	11.6 / 13.7
	100	49.3 / 49.3	60.9 / 62.9	11.6 / 13.6
	250	45.4 / 45.3	56.9 / 58.9	11.5 / 13.6
	500	42.3 / 42.3	53.9 / 55.9	11.6 / 13.6
	750	40.6 / 40.5	52.2 / 54.2	11.6 / 13.7
	1,000	39.3 / 39.3	50.9 / 52.9	11.6 / 13.6
Kaiser Road, Maximum Traffic Noise at JTNP Boundary	Joshua Tree NP	35.0 / 35.2	39.0 / 40.5	4.0 / 5.3

CNEL = community noise equivalent level (a 24-hour weighted average)
Source: See Appendix N noise calculations.

Along SR-177 south of Kaiser Road, the Desert Sunlight Solar Farm project would generate up to 225 AADT with 5.7 percent medium trucks and 9.5 percent heavy trucks (BLM 2011 – Appendix E2, Table E2-1, Alt 1&2, 2012). Combined with existing traffic and that generated by the DHSP (assuming peak construction period), noise levels would increase by about 0.7 dBA 1-hour Leq and 1 dBA CNEL from existing conditions, which would not be a noticeable increase. At 100 feet from the centerline of SR-177, CNEL levels would be within Riverside County's conditionally acceptable range for rural residential land uses (Table 3.12-2; 55-70 dBA CNEL) and at about 1,000 feet back within the normally acceptable range for rural residential land uses (Table 3.12-2; up to 60 dBA CNEL).

Along Kaiser Road south of Lake Tamarisk, the Desert Sunlight Solar Farm project would generate up to 222 AADT with 24.8 percent medium trucks and 21.5 percent heavy trucks (BLM 2011 – Appendix E2, Table E2-1, Alt 1&2, 2012). Combined with existing traffic and that generated by the DHSP (assuming peak construction period), noise levels would increase by about 4 dBA 1-hour Leq and 5 dBA CNEL from existing conditions, which would be a subtle, noticeable

increase over existing conditions. Along Kaiser Road north of Lake Tamarisk, the combination of Desert Sunlight Solar Farm project with existing traffic and traffic generated by the DHSP (assuming peak construction period) would result in a noise level increase of about 12 dBA 1-hour Leq and 14 dBA CNEL from existing conditions. This would result in a substantial increase over existing conditions and sound like a doubling of existing noise levels. At 50 feet from the centerline of Kaiser Road, CNEL levels would be within Riverside County's conditionally acceptable range for rural residential land uses (Table 3.12-2; 55-70 dBA CNEL) and at about 280 feet back within the normally acceptable range for rural residential land uses (Table 3.12-2; up to 60 dBA CNEL).

The common project roadway to JTNP is Kaiser Road (not including the I-10, where construction-related traffic would have little impact on traffic noise levels as indicated in Table 4.12-3). JTNP is located approximately 4.6 miles from Kaiser Road at its closest point south of Lake Tamarisk, and approximately 3.4 miles west of Kaiser Road at its closest point north of Lake Tamarisk. Ambient noise levels within JTNP are 35 dBA or less. As shown in Table 4.12-8, and assuming existing noise levels of 35 dBA at the Park boundary, the noise level increase within JTNP as a result of additional construction traffic along Kaiser Road, including noise from existing traffic to Lake Tamarisk would be noticeable (a 4-5 dBA increase).

The timing for approval and construction of the Desert Center 50 Solar is not known, but could potentially overlap with part of the construction period for the DHSP. As noted above, construction of the Silverado Power Solar Project is not anticipated to begin until 2015 or later; therefore, construction activities would likely not occur at the same time as the DHSP. Gen-tie line Alternatives C through E would cross these projects; however, construction would be moving linearly along the transmission line alignment and would not be in a given area for more than a few days to a few weeks. The probability of construction activities to be occurring at the same time and in close enough proximity (within 2,500 feet) to combine and result in a cumulative effect is low. A substantial cumulative noise effects from gen-tie construction would not occur.

Since the geographic scope of potential ground vibration effects is limited to a distance of a few hundred feet from the source of the vibrations, and no noise- or vibration-sensitive land uses are within that distance from both the DHSP and one or more of the other solar energy projects, no cumulative vibration effects from on-site construction activities would be expected to occur.

Due to the limited geographic scope of potential noise and ground vibration effects (as discussed above), operation of the proposed project would not contribute to adverse long-term increases in noise or vibration levels in the area, as operational noise levels are not cumulatively considerable. Because no substantial operational noise or vibration increases would result from the proposed project, it would be consistent with the local noise regulations.

4.12.16 CEQA Considerations

This section is included in this EIS for future use by CEQA Lead and Responsible agencies, and is not required under NEPA.

CEQA Significance Criteria

The significance criteria listed below were generated based on the Environmental Checklist Form in Appendix G of the CEQA Guidelines. They are used to determine whether the Proposed Action or alternatives would result in significant impacts under CEQA related to noise.

The proposed project and alternatives would result in a significant impact related to noise if they would:

NZ-1 Generate noise levels that pose a risk of hearing damage for persons living or working at off-site locations (90 dBA as a time-weighted 8-hour average or peak noise levels above 115 dBA).

NZ-2 Expose residents or visitors to on-site noise levels that exceed land use compatibility standards or criteria established in the noise element of the Riverside County General Plan (see Table 3.12-2 in the Noise and Vibration section of Chapter 3).

NZ-3 Cause off-site noise levels to exceed land use compatibility standards or criteria established in the local general plan (see Table 3.12-2 in the Noise and Vibration section of Chapter 3).

NZ-4 Create a long-term impact on noise-sensitive land uses by increasing long-term ambient CNEL levels by 10 dBA or more, even if the resulting noise level is below applicable land use compatibility standards.

NZ-5 Generate noise levels that exceed standards established by local ordinances or by State or federal agency regulations (see Table 3.12-4 and associated text discussions in the Noise and Vibration section of Chapter 3).

NZ-6 Expose people to excessive ground-borne vibration or ground-borne noise levels (see Table 3.12-5 in the Noise and Vibration section of Chapter 3).

NZ-7 Generate ground-borne vibration levels that pose a risk of cosmetic damage to on-site or off-site buildings (see Table 3.12-5 in the Noise and Vibration section of Chapter 3).

For the DHSP, the following criteria were determined to be inapplicable or to result in no impact:

- Expose on-site workers to noise levels that exceed occupational safety standards (90 dBA as a time-weighted 8-hour average or peak noise levels above 115 dBA).
- Expose residents to airport or private airstrip-related noise levels above a CNEL of 65 dBA.

Occupational noise exposure is governed by federal and State regulations. The California Divisions of Occupational Safety and Health (Cal/OSHA) administers industrial safety regulations in California. Cal/OSHA regulations establish a time-weighted noise exposure limit of 90 dBA averaged over 8 hours (California Code of Regulations, Title 8, Article 105). Noise source controls, administrative procedures, or worker hearing protection must be provided if worker noise exposure would exceed the 90 dBA limit. The project owner would be expected to follow Cal/OSHA requirements for construction worker noise exposure. Consequently, worker noise exposure issues are not discussed further under any of the alternatives.

There are two private airstrips in the general project vicinity. Eagle Mountain Airstrip is about 3.6 miles northwest of the proposed solar facility site and Desert Center Airport is about 3 miles south-southeast of the project site. Both airstrips have very low use levels. Desert Center Airport used to be a public airfield, but has been sold to the developer of the Chuckwalla Valley Raceway. The Desert Center Airport is now operated as a private airstrip. The Riverside County Airport Land Use Compatibility Plan shows that the 55 dBA CNEL contour for the Desert

Center Airport is confined to the immediate runway area (Riverside County 2004 – Map DC-3). No airfield noise contours have been developed for the Eagle Mountain Airstrip, but the comparable low use values for that facility suggest that the 55 dBA CNEL noise contour would similarly be limited to the immediate runway area. None of the project alternatives would create residential land uses, and all project features are outside the airfield properties. Consequently, airport-related noise issues are not discussed further under any of the alternatives.

CEQA Significance Determination

Alternative 1. Under Alternative 1, the proposed DHSP would not be approved by the BLM, and BLM would not amend the CDCA Plan. As a result, no solar energy project would be constructed at the project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no ground disturbance. As a result, impacts from project-related noise would not occur.

Alternative 2. Under Alternative 2, the proposed DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site available for future solar energy development. As a result, the DHSP would not be constructed on the project site and BLM would manage the site consistent with the amended land use designation in the CDCA Land Use Plan. No impacts from the DHSP would occur.

Alternative 3. Under Alternative 3, the proposed DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site unavailable for future solar energy development. As a result, the DHSP would not be constructed on the project site and BLM would manage the site consistent with the amended land use designation in the CDCA Land Use Plan. No impacts from the DHSP would occur.

Alternative 4. Construction activities would generate higher noise levels than construction-related traffic, operational activities, or decommissioning activities at the solar facility site. Maximum 1-hour Leq noise levels associated with construction activities would be about 83 dBA at the solar facility property line (100 feet from construction activity) and about 43 dBA at the nearest identified occupied residence (6,500 feet away). Hearing protection standards adopted by Cal/OSHA are an 8-hour time-weighted average of 90 dBA and a peak noise level of 115 dBA. Noise from construction, operation, and decommissioning of the solar facility under Alternative 4 would not pose a risk of hearing damage at off-site locations, and thus would be a less-than-significant impact (CEQA significance criterion NZ-1).

The solar facility site would not contain any noise-sensitive land uses. Maximum on-site CNEL increments from construction activity would be about 78 dBA at a distance of 100 feet from active construction operations, which is within Riverside County's conditionally acceptable range for industrial and utility land uses (see Table 3.12-2; 70-80 dBA CNEL). Noise levels generated during operations and decommissioning activities would be less than those estimated for construction. Consequently, construction, operation, and decommissioning of the solar facility site would not create on-site noise-related land use compatibility problems, and would have a less-than-significant impact (CEQA significance criterion NZ-2).

For the residence closest to the solar farm site (located 6,500 feet away), maximum CNEL increments from on-site construction activity would be less than 46 dBA (see Table 4.12-2, array post installation), which is within Riverside County's normally acceptable range for rural residential land uses (see Table 3.12-2; up to 60 dBA CNEL). JTNP is located a minimum of 1.8 miles from the project site, where ambient noise levels are expected to be 35 dBA or less. The NPS has provided a performance standard for noise mitigation limiting noise levels at the Park boundary from the project to 35 dBA. On-site construction noise levels at JTNP would be below 35 dBA with implementation of Mitigation Measure NOI-2.

Construction-related traffic would increase noise levels along SR-177 and Kaiser Road. Along SR-177, existing noise levels of 72 dBA CNEL are already above the Riverside County's conditionally acceptable range for rural residential land uses (see Table 3.12-2; 55-70 dBA CNEL). The addition of the proposed project would increase noise levels by about less than 1 dBA, which would not be noticeable and not significant. Along Kaiser Road south of Lake Tamarisk Road there would be a noticeable increase in traffic noise levels (3-4 dBA increase); however, along Kaiser Road north of Lake Tamarisk Road there would be a substantial increase (>10 dBA increase). The maximum noise levels at 50 feet from the centerline of Kaiser Road north of Lake Tamarisk would be 66 dBA CNEL, and south of Lake Tamarisk would be 64 dBA CNEL. Therefore, at 50 feet from the centerline of Kaiser Road, CNEL levels would be within Riverside County's conditionally acceptable range for rural residential land uses (Table 3.12-2; 55-70 dBA CNEL) and at 180 feet back within the normally acceptable range for rural residential land uses (Table 3.12-2; up to 60 dBA CNEL).

Ambient noise levels within JTNP are expected to be 35 dBA or less, and the NPS has provided a performance standard for noise mitigation limiting noise levels at the Park boundary from the project to 35 dBA. The closest project roadway to JTNP is Kaiser Road (not including the I-10, where construction-related traffic would have little impact on traffic noise levels as indicated in Table 4.12-3). JTNP is located approximately 4.6 miles from Kaiser Road (at the closest point south of Lake Tamarisk) and approximately 3.4 miles west of Kaiser Road (at the closest point north of Lake Tamarisk). As shown in Table 4.12-3, and assuming a performance standard of 35 dBA at the Park boundary, the noise level increase within JTNP resulting from the additional construction traffic along Kaiser Road including noise from existing traffic to Lake Tamarisk would be noticeable (a 3-4 dBA increase), but not significant.

Operational noise levels from the solar facility would also be within Riverside County's normally acceptable range for rural residential land uses at the property line. Noise from decommissioning activities would be similar to but somewhat less than noise from construction activities. Consequently construction, operation, and decommissioning of the solar facility site would not create noise-related land use compatibility problems at off-site locations, and would have a less-than-significant impact (CEQA significance criterion NZ-3).

While overall construction activities would last for about two years, the majority of on-site construction activities at the solar facility site would be well over 6,500 feet from the nearest residence east-southeast of the site and 1.5 miles from other identified residences. Even then, only a small portion of the overall construction activity would occur within 6,500 feet of the nearest residence. Consequently, on-site construction activities for the solar farm would not constitute long-term sources of noise level increases at noise-sensitive land uses. Construction-related traffic would increase CNEL levels along Kaiser Road for a period of about two years.

CNEL levels would be increased by up to 11.5 dBA, which would be a significant increase over ambient noise conditions resulting in a significant and unavoidable impact (CEQA significance criterion NZ-4). Operational noise levels from the solar facility would not increase existing CNEL levels at any noise-sensitive land uses. Consequently, operational noise levels from the solar facility would be a less-than-significant (CEQA significance criterion NZ-4). Decommissioning noise levels would be similar to but somewhat less than noise levels associated with construction activities. Consequently, noise from solar facility decommissioning would be a less-than-significant impact (CEQA significance criterion NZ-4).

Construction and decommissioning activities for the solar facility site when located near inhabited dwellings would be limited to daytime hours pursuant to Mitigation Measure NOI-1 and consistent with the Riverside County noise ordinance (beginning at 7:00 a.m. during most of the year, and perhaps starting as early as 6:00 a.m. during the summer months, and ending no later than 6:00 p.m.). Consequently, construction and decommissioning activities would be exempt from the Riverside County noise ordinance and noise from construction activity at the solar facility site would be a less-than-significant impact (CEQA significance criterion NZ-5). The on-site substation would be located over 1.25 miles from the closest existing residence and over 3.5 miles east from JTNP. Under gen-tie Alternative E (New Cross-Valley Alignment), the substation would be located in the southern-middle portion of the site; the closest existing residence would be approximately 2 miles away and JTNP would be approximately 3 miles away. Under either substation location scenario, daytime noise generation from the on-site substation is expected to be 40 dBA at 1,535 feet (BLM 2011), and would be well below 35 dBA at the boundary to JTNP. Nighttime noise generation from the on-site substation is expected to be 40 dBA at a distance of 200 feet and 35 dBA at a distance of 353 feet (BLM 2011), and again would be well below 35 dBA at the boundary of JTNP. These noise levels would meet the Riverside County stationary source exterior noise limit of 65 dBA, 10-minute Leq; the Riverside County Ordinance No. 847, which limits noise at rural residential properties to 45 dBA Lmax; and meet the JTNP's goal to not increase ambient noise levels within the Park as a result of construction activities outside the Park. Therefore, operational noise levels at the solar facility site would comply with local standards and impacts would be less than significant (CEQA significance criterion NZ-5).Ground vibrations from construction or decommissioning activities would not be perceptible at off-site locations. Operational activities at the solar facility would not generate meaningful ground vibrations. Consequently, ground vibration impacts from solar facility construction, operation, and decommissioning would be less than significant (CEQA significance criterion NZ-6).

Ground vibrations from construction or decommissioning activities would pose no risk of cosmetic damage to any existing buildings. Operational activities at the solar facility would not generate meaningful ground vibrations. Consequently, ground vibration impacts from solar facility construction, operation, and decommissioning would be less than significant (CEQA significance criterion NZ-7).

On-site construction noise from the proposed project would not be cumulatively considerable; however, off-site (traffic) construction noise would be significant, and when combined with the Desert Sunlight Solar Farm Project would result in a cumulatively significant and unavoidable impact. Noise impacts related to the operations of the proposed project and vibration impacts would not be cumulatively considerable and would not result in significant cumulative impacts.

Alternative 5. Under Alternative 5 the solar facility site would be constructed the same as Alternative 4, however, project components would be excluded from the WHMA. This represents a very small portion of the site, in an area located away from any identified residences. Therefore, noise and vibration impacts and CEQA significance conclusions for criteria NZ-1 through NZ-7 regarding construction, operation, and decommissioning would essentially be the identical to Alternative 4, discussed above. Cumulative impacts would also be identical to Alternative 4.

Alternative 6. Similar to Alternative 5, Alternative 6 would also develop a slightly smaller area of the solar facility site than proposed under Alternative 4. The area to be developed continues to be those areas located nearest identified residences. Furthermore, construction activities would occur on the same schedule as for Alternative 4 and would require the same types of equipment. The size of the area disturbed on a given day would be smaller under Alternative 6 than under Alternatives 4 and 5. While total numbers of some equipment items would be less under Alternative 6 than under Alternatives 4 or 5, similar types and numbers of equipment items would typically be operating in proximity under Alternatives 4, 5, and 6. For noise analysis purposes, it has been assumed that the number and types of equipment operating in proximity for Alternative 6 would be the same as analyzed for Alternative 4. Similarly, operational noise under Alternative 6 would be essentially the same as that discussed for Alternative 4. Therefore, noise and vibration impacts and CEQA significance conclusions for criteria NZ-1 through NZ-7 regarding construction, operation, and decommissioning would be identical to Alternative 4, discussed above. Cumulative impacts would also be identical to Alternative 4.

Alternative 7. Similar to Alternative 6, Alternative 7 would also develop a slightly smaller area of the solar facility site than proposed under Alternative 4. The area to be developed continues to be those areas located nearest identified residences. Furthermore, construction activities would occur on the same schedule as for Alternative 4 and would require the same types of equipment. The size of the area disturbed on a given day would be smaller under Alternative 7 than under Alternatives 4 and 5. While total numbers of some equipment items would be less under Alternative 7 than under Alternatives 4 or 5, similar types and numbers of equipment items would typically be operating in proximity under Alternatives 4, 5, and 7. For noise analysis purposes, it has been assumed that the number and types of equipment operating in proximity for Alternative 7 would be the same as analyzed for Alternative 4. Similarly, operational noise under Alternative 7 would be essentially the same as that discussed for Alternative 4. Therefore, noise and vibration impacts and CEQA significance conclusions for criteria NZ-1 through NZ-7 regarding construction, operation, and decommissioning would be identical to Alternative 4, discussed above. Cumulative impacts would also be identical to Alternative 4.

Alternative A. Under Alternative A, no gen-tie line would be constructed or operated as part of the DHSP. Therefore, no noise or vibration impacts under criteria NZ-1 through NZ-7 related to construction, operations and maintenance, or decommissioning would occur. Alternative A would not contribute to cumulative impacts.

Alternative B. Construction activities would generate higher noise levels than construction-related traffic, operational activities, or decommissioning activities for the gen-tie line. Maximum 1-hour Leq noise levels associated with construction activities would be 84 dBA at a distance of 100 feet from active construction work areas and about 69 dBA at the nearest existing residences (500 feet away). Maximum average noise levels over a construction day would be 80

dBA at a distance of 100 feet from active construction work areas and about 65 dBA at the nearest residences (500 feet away). Hearing protection standards adopted by Cal/OSHA are an 8-hour time-weighted average of 90 dBA and a peak noise level of 115 dBA. Noise from construction, operation, and decommissioning of the gen-tie line under Alternative B would not pose a risk of hearing damage at off-site locations, and thus would be a less-than-significant impact (CEQA significance criterion NZ-1).

The gen-tie line corridor itself would not contain any noise sensitive land uses. Maximum CNEL increments from construction activities would be about 77 dBA at the edge of the gen-tie line corridor (100 feet distance), which is within Riverside County's conditionally acceptable range for industrial and utility land uses (see Table 3.12-2; 70-80 dBA CNEL). There would be no persistent operational noise from the gen-tie line, with the exception of corona noise. Southern California Edison has estimated corona discharge noise from 230 kV transmission lines at 50 dBA at the edge of the transmission line ROW (CPUC 2006). These noise levels are within Riverside County's normally acceptable range for industrial and utility land uses. Noise from decommissioning activities would be similar to but somewhat less than noise from construction activities. Consequently construction, operation, and decommissioning of the gen-tie line under Alternative B would not create on-site noise-related land use compatibility problems, and would have a less-than-significant impact (CEQA significance criterion NZ-2).

For the residences closest to the gen-tie line corridor (500 feet away), maximum CNEL increments from construction activities would be about 62 dBA, which is within Riverside County's conditionally acceptable range for rural residential land uses (see Table 3.12-2; 55-70 dBA CNEL). JTNP is located 3.4 miles west of the Alternative B gen-tie alignment, where ambient noise levels are expected to be 35 dBA or less. The NPS has provided a performance standard for noise mitigation limiting noise levels at the Park boundary from the project to 35 dBA. On-site construction noise levels at JTNP would be below 35 dBA with implementation of Mitigation Measure NOI-2.

Construction activities are expected to last about twelve months. During that time, construction activity would advance in a linear fashion along the 12.1-mile transmission line corridor. Construction-related traffic would increase noise levels along SR-177 and Kaiser Road. Along SR-177, existing noise levels of 72 dBA CNEL are already above Riverside County's conditionally acceptable range for rural residential land uses (see Table 3.12-2; 55-70 dBA CNEL). The addition of the proposed project (including the gen-tie line) would increase noise levels by less than 1 dBA, which would not be noticeable and not significant. Along Kaiser Road south of Lake Tamarisk Road there would be a noticeable increase in traffic noise levels (3-4 dBA increase); however, along Kaiser Road north of Lake Tamarisk Road there would be a substantial increase in traffic noise levels (>10 dBA increase). The maximum noise levels at 50 feet from the centerline of Kaiser Road north of Lake Tamarisk would be 66 dBA CNEL, and south of Lake Tamarisk would be 64 dBA CNEL. Therefore, at 50 feet from the centerline of Kaiser Road, CNEL levels would be within Riverside County's conditionally acceptable range for rural residential land uses (Table 3.12-2; 55-70 dBA CNEL) and at 180 feet back within the normally acceptable range for rural residential land uses (Table 3.12-2; up to 60 dBA CNEL).

The closest project roadway to JTNP is Kaiser Road (not including the I-10, where construction-related traffic would have little impact on traffic noise levels as indicated in Table 4.12-3). JTNP is located approximately 4.6 miles from Kaiser Road at its closest point south of Lake Tamarisk,

and approximately 3.4 miles west of Kaiser Road at its closest point north of Lake Tamarisk. Ambient noise levels within JTNP are expected to be 35 dBA or less. As shown in Table 4.12-3, and assuming existing noise levels of 35 dBA at the Park boundary, the noise level increase within JTNP resulting from the additional construction traffic along Kaiser Road including noise from existing traffic to Lake Tamarisk would be noticeable (a 3-4 dBA increase), but not significant.

There would be no persistent operational noise from the gen-tie line, with the exception of corona noise. Southern California Edison has estimated corona discharge noise from 230 kV transmission lines at 50 dBA at the edge of the transmission line ROW (CPUC 2006). The closest residences are located 500 feet away, such that corona noise would be indiscernible from background ambient noise. These noise levels are also within Riverside County's normally acceptable range for rural residential land uses (see Table 3.12-2; up to 60 dBA CNEL). Noise from decommissioning activities would be similar to but somewhat less than noise from construction activities. Consequently construction, operation, and decommissioning of the gen-tie line under Alternative B would not create noise-related land use compatibility problems at off-site locations, and would have a less-than-significant impact (CEQA significance criterion NZ-3).

Construction activities are expected to last about twelve months. During that time, construction activity would advance in a linear fashion along the 12.1-mile transmission line corridor. Consequently, construction activity would be near any given location for only a few weeks of the overall construction period. Consequently, on-site construction activities for the gen-tie line under Alternative C would not constitute long-term sources of noise level increases at noise-sensitive land uses (CEQA significance criterion NZ-4). Construction-related traffic (solar facility and gen-tie line) would increase CNEL levels along Kaiser Road for a period of about two years. CNEL levels would be increased by up to 11.5 dBA, which would be a significant increase over ambient noise conditions resulting in a significant and unavoidable impact (CEQA significance criterion NZ-4). The gen-tie line would have no persistent operational noise generation, with the exception of corona noise. Southern California Edison has estimated corona discharge noise from 230 kV transmission lines at 50 dBA at the edge of the transmission line ROW (CPUC 2006). Ambient noise levels during rainstorms often exceed this noise level, especially if the rain is accompanied by high winds. The closest residences are located 500 feet away, such that corona noise would be indiscernible from background ambient noise; operational noise impacts would be less than significant (CEQA significance criterion NZ-4). Decommissioning noise levels would be similar to but somewhat less than noise levels associated with construction activities. Consequently, noise from decommissioning the gen-tie line would result in a less-than-significant impact (CEQA significance criterion NZ-4).

Construction activity for the gen-tie line under Alternative B would be limited to daytime hours when located near inhabited dwellings pursuant to Mitigation Measure NOI-1 and consistent with the Riverside County noise ordinance (beginning at 7:00 a.m. during most of the year, and perhaps starting as early as 6:00 a.m. during the summer months, and ending no later than 6:00 p.m.). Consequently, construction activities would be exempt from the Riverside County noise ordinance. Implementation of Mitigation Measure NOI-2 would also ensure that the JTNP's goal to not increase ambient noise levels within the Park as a result of on-site construction activities outside the Park would be met. Therefore, noise impacts from construction activities along the gen-tie line would be less than significant (CEQA significance criterion NZ-5).

Ground vibrations from construction or decommissioning activities would not be perceptible at off-site locations. Operational activities at the gen-tie line would not generate meaningful ground vibrations. Consequently, ground vibration impacts from gen-tie line construction (stringing only under Alternative B), operation, and decommissioning would be less than significant (CEQA significance criterion NZ-6).

Ground vibrations from construction or decommissioning activities would pose no risk of cosmetic damage to any existing buildings. Operational activities at the gen-tie line would not generate meaningful ground vibrations. Consequently, ground vibration impacts from gen-tie line construction, operation, and decommissioning would be less than significant (CEQA significance criterion NZ-7).

Alternative B would not contribute to cumulative noise effects, as the cumulative scenario assumes concurrent construction of the Desert Sunlight approved gen-tie and Alternative B conductor stringing using the same crew at the same time, with no additional work required for Alternative B beyond what is required for the Desert Sunlight gen-tie.

Alternative C. Construction activity noise and vibration estimates presented previously for the gen-tie line under Alternative B would apply equally to construction activity under Alternative C. However, under Alternative C the closest residence would be located farther away than under Alternative B (600 feet vs. 500 feet). Therefore, noise and vibration impacts resulting from the construction of the gen-tie line under Alternative C would be slightly reduced compared to those described under Alternative B. Impact conclusions would be identical to Alternative B for criteria NZ-1 through NZ-7. Cumulative on-site construction noise, which includes the solar facility and gen-tie line, from the proposed project would not be cumulatively considerable; however, off-site (traffic) construction noise would be significant, and when combined with the Desert Sunlight Solar Farm project would result in a cumulatively significant and unavoidable impact. Noise impacts related to the operations of the gen-tie line and vibration impacts would not be cumulatively considerable and would not result in significant cumulative impacts.

Alternative D. Construction activity noise and vibration estimates presented previously for the gen-tie line under Alternative B would apply equally to construction activity under Alternative D. However, under Alternative D the closest residence would be located farther away than under Alternative B (1,450 feet vs. 500 feet). Therefore, noise and vibration impacts resulting from the construction of the gen-tie line under Alternative D would be slightly reduced compared to those described under Alternative B. Impact conclusions would be identical to Alternative B for criteria NZ-1 through NZ-7. Cumulative impacts would also be identical to Alternative C.

Alternative E. Construction activity noise and vibration estimates presented previously for the gen-tie line under Alternative B would apply equally to construction activity under Alternative E. However, under Alternative E the closest residence would be located farther away than under Alternative B (900 feet vs. 500 feet). Therefore, noise and vibration impacts resulting from the construction of the gen-tie line under Alternative E would be slightly reduced compared to those described under Alternative B. Impact conclusions would be identical to Alternative B for criteria NZ-1 through NZ-7. Cumulative impacts would also be identical to Alternative C.

4.13 PUBLIC HEALTH AND SAFETY

4.13.1 Methodology for Analysis

County maps were reviewed to determine the proposed project's proximity to schools and airports. In addition, the risk of fire was evaluated based on hazard maps and assessments provided in the County of Riverside General Plan (2003). The County of Riverside General Plan was also reviewed for requirements for Emergency Response Plans, hazard management plans, and wildfire potential. A contaminated sites database search was performed in 2010 for the adjacent Desert Sunlight Solar Farm (DSSF) project (incorporated by reference in Section 1.11), and the area of inquiry included the site of the proposed project and alternatives.

4.13.2 Applicant Measures

The following Applicant Measures (AMs) have been incorporated as design features of the proposed project (and all action alternatives) and shall be implemented to reduce adverse impacts associated with the project. In some cases, mitigation measures further clarify or expand on AM reporting requirements, timing of implementation, or other details where appropriate. Where there is a conflict between provisions of the mitigation measures imposed and the following AMs, the mitigation measures take precedence.

AM HAZ-1 **Spill containment and clean-up kits.** Spill containment and clean-up kits shall be kept on site. Appropriate spill containment and clean-up kits shall be kept on site during construction and maintained during the operation of the Solar Farm and Gen-Tie Line.

AM HAZ-2 **Hazardous Materials Management Plan**. In accordance with the Emergency Planning & Community Right to Know Act, the Applicant shall supply the local emergency response agencies with a Hazardous Materials Management Plan and an associated emergency response plan and inventory specific to the site. The Applicant shall prepare the plan for approval by the BLM and review and comment by the County of Riverside. The Applicant shall be responsible for implementing the approved plan.

AM HAZ-3 **Best Management Practices (BMPs) for hazardous materials**. During construction of the solar facility and gen-tie line, BMPs for handling, storing, and disposing of hazardous materials and waste shall be followed.

AM HAZ-4 **Spill Prevention Control and Countermeasures (SPCC) Plan**. A SPCC Plan will be developed and implemented that would identify primary and secondary containment for oil products stored on site as well as training in spill management in the event of an unexpected release. The Applicant shall prepare the plan for approval by the BLM. The Applicant shall be responsible for implementing the approved plan.

AM HAZ-5 **Environmental Health and Safety Plan**. The Applicant shall develop an Environmental Health and Safety Plan for the construction and operation of the project to ensure it includes all activities and compliance with all local, state and federal regulatory requirements. Illness and Injury Prevention Programs will be developed for construction and operation. The Applicant shall prepare the plan for

approval by the BLM. The Applicant shall be responsible for implementing the approved plan.

AM HAZ-6 **Emergency Response and Inventory Plan**. The Applicant shall provide the County of Riverside with a project-specific Emergency Response and Inventory Plan before construction begins. The Applicant shall prepare the plan for approval by the BLM and review and comment by the County of Riverside. The Applicant shall be responsible for implementing the approved plan.

AM HAZ-7 **Fire Protection and other requirements**. Project facilities will be designed, constructed, and operated in accordance with applicable fire protection and other environmental, health and safety requirements. In compliance with County of Riverside requirements, a project-specific fire prevention plan for both construction and operation of the solar facility and gen-tie line will be completed prior to initiation of construction. The fire protection plan will be approved by the BLM and provided to Riverside County for review and comment.

AM HAZ-8 **Fire Prevention Plan**. A project-specific fire prevention plan will be in place during construction, operation and decommissioning of the project. This plan will comply with applicable County of Riverside regulations and would be coordinated with the BLM Fire Management Officer and the local Fire Department in the Chuckwalla Valley at Tamarisk Park.

AM HAZ-9 **Emergency Response Plan**. An emergency response plan and site security plan will be completed for the project facilities by qualified professionals. These plans will be developed in accordance with the BLM requirements

AM HAZ-10 **Decommissioning Plan**. When permanent closure is appropriate, a decommissioning plan would be developed and submitted to the BLM for review and approval. The following strategy would be taken:

- Analyze alternatives other than full restoration of the site (for instance, removal of old facilities and upgrading to newer solar technology)
- Use industry standard demolition means and methods to decrease personnel and environmental safety exposures by minimizing time and keeping personnel from close proximity to actual demolition activities to the extent practical
- Plan components of decommissioning to ensure personnel and environmental safety are maintained while efficiently completing the work
- Provide for recycling the components of the plant: metal, panels, concrete; and proper disposal of all other materials
- Remove all residual materials and chemicals from the site prior to demolition for reuse at other facilities or disposal at licensed facilities
- Demolition of below-ground facilities to a depth required for restoration of the native habitat
- Soils clean-up, if needed, particularly at locations where hazardous materials were used or stored to ensure that clean closure is achieved

Restore the lines and grades in the disturbed area to match the natural gradients of the site and re-establish native vegetation in the disturbed areas

4.13.3 Alternative 1 – No Action (No Plan Amendment)

Under Alternative 1, the proposed DHSP would not be approved by the BLM, and BLM would not amend the CDCA Plan. As a result, no solar energy project would be constructed on the project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan. Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no ground disturbance. As a result, effects from the project would not occur.

4.13.4 Alternative 2 – No Project Alternative (with Plan Amendment to Find the Site Suitable for Solar Energy Development)

Under Alternative 2, the proposed DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site available for future solar energy development. As a result, the DHSP would not be constructed on the project site and BLM would manage the site consistent with the amended land use designation in the CDCA Plan. It is possible that, as a result of the CDCA Plan amendment, that in the future another solar energy generation project could be proposed with impacts similar to the DHSP, however, such impacts are speculative at this time, and no effects from the DHSP would occur.

4.13.5 Alternative 3 – No Project Alternative (with Plan Amendment to Find the Site Unsuitable for Solar Energy Development)

Under Alternative 3, the DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site unavailable for future solar energy development. As a result, the DHSP would not be constructed on the project site and BLM would manage the site consistent with the amended land use designation in the CDCA Land Use Plan. No impacts from the DHSP would occur.

4.13.6 Alternative 4 – Proposed Solar Project

Construction

Construction of Alternative 4 would require clearance of 1,208 acres. Development of the solar facility site is described in Section 2.4 (Alternative 4). In addition to the solar array, other permanent land uses include the operation & maintenance (O&M) facilities, on-site substation and switchyard.

Direct Effects

Hazardous Materials. Construction of Alternative 4 would require the use, storage, and disposal of some hazardous and potentially hazardous materials, such as those shown in Table 4.13-1. Hazardous or flammable materials used during construction would consist primarily of small volumes of petroleum hydrocarbons and their derivatives (e.g., fuels, oils, lubricants, and solvents) required for the operation of construction equipment. These materials would be those

routinely associated with the operation and maintenance of heavy construction equipment or other support vehicles, such as gasoline, diesel fuels, and hydraulic fluids. Specific hazardous materials that would be transported to the site and be present on site during construction are listed in Table 4.13-1. Also during the construction phase, large quantities of transformer oil would be transported to the site for use in the substation and power block transformers. Hazardous materials are discussed in more detail in Sections 3.21 and 4.21 (Solid and Hazardous Wastes).

Table 4.13-1. Hazardous Materials/Petroleum Products Stored on Site During Construction

Hazardous Material	Use
Diesel Fuel	Construction Equipment and Vehicles
Gasoline	Construction Equipment and Vehicles
Motor Oil	Construction Equipment and Vehicles
Hydraulic Fluids and Lubricating Oils	Construction Equipment and Vehicles
Solvents and Adhesives	PV Module Assembly
Soil Stabilizers	Roads and PV Assembly Areas
Mineral Oil	Transformers
BLM-Approved Herbicide	On an As-Needed Basis for Invasive Weeds
Batteries, paints, thinners, and cleaning solvents	Construction Equipment and Vehicles

The DHSP may use a variety of PV technologies, including copper indium gallium cyanide panels, which are manufactured using the toxic elemental metal cadmium. Chemicals within PV modules are highly stable; even if the modules become broken or damaged during construction, these substances would not mobilize into the environment except under extremely rare conditions. A fire at the Alternative 4 site during construction could release chemicals from installed PV panels; however, fires are unlikely to occur because of the lack of fuel to support a sustained wildfire. Grass fires are the most likely fire exposure for ground-mounted PV systems, and these fires tend to be short-lived. As a result, these fires are unlikely to expose PV modules to prolonged fire conditions or to temperatures high enough to volatilize panel constituents. Mitigation Measure (MM) FIRE-1 would also reduce potential effects from related fire risks by requiring the development of a project specific Fire Prevention Plan.

In order to control weeds, the proposed project would utilize BLM-approved herbicides as appropriate. As described in Chapter 1, the DHSP EIS is tiered to the BLM's 2007 *Vegetation Treatments Using Herbicide Programmatic Final Environmental Impact Statement* (Herbicide PFEIS). The proposed project would use only the approved herbicides included in Table 2 (Herbicide Application Matrix) in the Integrated Weed Management Plan for the DHSP included in Appendix C.10. Only application methods addressed in the Herbicide PFEIS would be used and all use would be in accordance with U.S. EPA label instructions and would be overseen by a certified herbicide applicator. MM PHS-9 (use licensed herbicide applicator) includes specific guidelines for herbicide applicators and herbicide application. By complying with the measures and standard operating procedures in the Herbicide PFEIS and MM PHS-9, the use of herbicides for the proposed project would not adversely affect public health and safety. The project operator would be required to strictly adhere to all relevant regulations regarding handling hazardous or potentially hazardous materials. In addition, MM PHS-6 (proper disposal or recycling of PV panels and other infrastructure) would ensure that project components are

disposed of in a manner that does not pose risks to human health or the environment. Therefore, the use of PV panels and other project components would not have any adverse, unavoidable effects on public health and safety.

Existing Contamination. Alternative 4 would not mobilize existing contaminants in groundwater or soil, or expose workers to contaminated or hazardous materials at levels in excess of those permitted by federal and state law. There are no known previously contaminated sites of concern located in the project study area. The Phase I Environmental Site Assessment for the DSSF project, located just north of the solar facility site, indicates that the entire Chuckwalla Valley area was historically used as a military training facility, and that there is potential for munitions and explosives of concern (MEC) to be present on portions of the site. As a result of historical military training activities associated with Desert Training Center/California-Arizona Maneuver Area, there is also the potential for MEC to occur on portions of the Alternative 4 footprint. Project construction personnel could sustain injuries if MECs were encountered on the project site during construction. MM PHS-8 (munitions plan) would reduce impacts from personnel encountering MEC during construction by requiring the project owner to gather available information on potential onsite MECs and ensuring that all construction workers receive MEC-related safety training.

Airports. Alternative 4 would have no aboveground structures that would increase safety hazards to the two private air strips. Therefore, construction of the project would not create safety hazards for the one small private air strip or the special use airport in the vicinity. No effects would occur.

Indirect Effects

Emergency Response. Because there is so little development in the area currently, construction of Alternative 4 has the potential to overburden existing emergency response capacity and impair implementation of County of Riverside's Emergency Operations Plan (Riverside 2006). The nearest fire station to Alternative 4 is Lake Tamarisk, which has only four staff (Baker 2011). MM PHS-4 (Environmental Health and Safety Plan) includes development of injury prevention programs and training that would reduce effects related to emergency response. In addition, MM PHS-5 (Emergency Response and Inventory Plan) and MM FIRE-1 would ensure that project personnel are trained to appropriately report and respond to emergencies. MM PHS-7 requires the project owner to create a fire services agreement with the Riverside County Fire Department/CAL FIRE and BLM in order to ensure adequate staffing or volunteers to respond to emergencies. These measures would ensure that Alternative 4 would not have unavoidable adverse effects related to emergency response.

Operation and Maintenance

Operation and maintenance activities include vegetation treatment for removal of weeds, torque electrical fitting, cleaning switch gear, calibration of protective relays, fire protection system test and annual certification, fuse swapping, and testing ground fault detection and power quality as described in Section 2.4.5.

Direct Effects

Hazardous Materials/Existing Contamination. During the operation and maintenance phase of the project, fewer hazardous materials would be used than during construction, but the types of hazardous materials would be the same. Similar to the construction phase of the project, the operational phase would involve some risk of exposing workers or the public to hazardous materials. With the implementation of MM PHS-1 through MM PHS-6 (Hazardous Materials Management Plan, BMPs for hazardous materials, SPCC Plan, Environmental Health and Safety Plan, Emergency Response and Inventory Plan, Recycling and Disposal of Panels), there would be no unavoidable adverse effects on public health and safety.

Airports. Alternative 4 would not have aboveground structures that would increase the safety hazards to the private air strip or the special use airport. Operation of the project would not impact either the private air strip or the special use airport. No adverse effects would occur.

Physical Hazards to Personnel and the Public. The Alternative 4 site is not subject to substantial flooding that could damage panels and result in a public safety hazard. As discussed in Section 4.20, Alternative 4 is not located on a FEMA 100-year floodplain, although the County of Riverside designates the area as having "possible but undetermined flood hazards." Section 4.20 also concludes that construction would not substantially increase the amount of damage to the area that could result from flooding. Furthermore, mitigation measures, such as detention and retention of storm water flows and use of elongated posts in risk areas, would reduce the potential for damage to the project from flooding.

Indirect Effects

Emergency Evacuation and Emergency Response Plan. Although there would be fewer workers at the project site during operation, Alternative 4 could still potentially overburden local emergency response capacity. As during construction, implementation MM PHS-4 (Environmental Health and Safety Plan), MM PHS-5 (Emergency Response and Inventory Plan), and MM FIRE-1 (Fire Prevention Plan) would ensure that project personnel are trained to appropriately report and respond to emergencies. MM PHS-7 (fire services agreement) would ensure that there are adequate staff/volunteers to respond to emergencies. These measures would ensure that the project would not have unavoidable adverse effects related to emergency response.

Decommissioning

At the end of the life of Alternative 4, above-ground structures would be removed and demolished, and the site would be returned to its original condition.

Direct Effects

Hazardous Materials/Existing Contamination. Waste would be generated as part of decommissioning. In addition, improper disposal or recycling of panels or other project components could result in long-term outdoor storage of metal, lead soldered, mineral oil-containing, and petroleum-lubricated parts (such as tracking motors and articulating support structures) and may result in contaminated runoff that could pose a hazard to people and the environment.

MM PHS-6 ensures proper recycling and disposal of photovoltaic panels and other infrastructure, including support structures, treated wood poles, transformers, and inverters. Final disposal

of project infrastructure would also be required to be in compliance with existing laws and regulations governing the recycling and disposal of materials, including hazardous materials, at the time of decommissioning. With the implementation of this measure in addition to MM PHS-1 through MM PHS-5, there would be no unavoidable adverse effects on public health and safety related to hazardous materials/waste because those measures generally require a level of management, prevention, and response preparedness adequate to control hazardous materials.

Airports. As discussed for construction, the decommissioning of the project would not impact either the private air strip or to the special use airport. All facilities associated with the project would be removed. No effects would occur.

Indirect Effects

Emergency Response. Project decommissioning could potentially overburden local emergency response capacity. As during construction, implementation of MM PHS-4 (Environmental Health and Safety Plan), MM PHS-5 (Emergency Response and Inventory Plan), and MM FIRE-1 (Fire Prevention Plan) would ensure that project personnel are trained to appropriately report and respond to emergencies. MM PHS-7 (fire services agreement) would ensure that there are adequate staff/volunteers to respond to emergencies. These measures would ensure that the project would not have unavoidable adverse effects related to emergency response.

Mitigation Measures

MM PHS-1 through MM PHS-5, and MM FIRE-1 below build on and supplement the Applicant Measures in Section 4.13.2. MM PHS-6 has been added to address recycling of solar panels and other project components. MM PHS-7 addresses a fire services agreement, MM PHS-8 has been added to reduce the potential risks of MECs, and MM PHS-9 addresses herbicide application requirements.

MM PHS-1 **A Hazardous Materials Management Plan shall be prepared.** In accordance with the Emergency Planning & Community Right to Know Act, the project owner shall supply the local emergency response agencies with a Hazardous Materials Management Plan and an associated emergency response plan and inventory specific to the site. The project owner shall prepare the plan for approval by the BLM and review and comment by the County of Riverside. The project owner shall be responsible for implementing the approved plan.

The plan shall include**:**

1. Introduction to the plan that identifies business activities;
2. Identification of owner/operator with contact information;
3. A hazardous materials inventory statement listing all hazardous materials used during construction and operation;
4. A facility map; and
5. An emergency response/contingency plan that includes an evacuation plan, emergency contacts, emergency resources, any special arrangements with emergency responders, emergency procedures, post-incident reporting/recording responsibilities; earthquake vulnerability inspection or isolation; emergency

equipment; and an employee training plan that documents training areas and capabilities.

MM PHS-2 **Best Management Practices (BMPs) for hazardous materials shall be implemented.** During construction of the solar project and gen-tie line, BMPs for handling, storing, and disposing of hazardous materials and waste shall be followed.

BMPs shall include:

1. Keeping materials in their original containers with the original manufacturer‘s label and resealed when possible;
2. Avoiding excessive on-site inventories of chemicals; procure and store only the amounts needed for the job;
3. Following manufacturer’s recommendation for proper handling and disposal;
4. Conducting routine inspections to ensure that all chemicals on site are being stored, used, and disposed of appropriately;
5. Performing timely maintenance on vehicles/equipment that are leaking oil or other fluids, and placing drip plans under the leak when the vehicle/equipment is parked prior to the maintenance event;
6. Performing fueling of vehicles and equipment in locations that are protected from spillage onto exposed ground surface
7. Ensuring that all personnel dealing with hazardous materials are properly trained in the use and disposal of these materials in accordance with local, state and federal regulations; and
8. Maintaining Material Safety Data Sheets (MSDS) available on the site for use during project construction and operation.

MM PHS-3 **A Spill Prevention Control and Countermeasures (SPCC) Plan shall be prepared.** An SPCC shall be developed and implemented identifies primary and secondary containment for oil products and other hazardous materials stored on site as well as training in spill management in the event of an unexpected release. The project owner shall be responsible for implementing the approved plan. Prior to construction permit issuance, the project owner shall submit to BLM for review and approval a site-specific spill response plan with the following elements:

1. General information:
   a. Name and location of facility
   b. Description of facility operations
   c. General manager and emergency coordinator names and phone numbers (home, work, pager, and mobile contact information)
   d. Description of what is stored at the facility (contents and volume)

e. Site diagram showing:

   i. Hazardous materials storage areas
   ii. Drains (storm and sanitary)
   iii. Surface waters
   iv. Buildings
   v. Surrounding neighborhood

2. Prevention: A description of prevention measures to be taken at the project site, such as secondary containment, employee training, and proper storage. Products shall be kept in their original containers with the original manufacturer's label and resealed when possible, and the manufacturer's recommendation for proper disposal shall be followed. The site superintendent shall perform routine inspections to ensure that all materials onsite are being stored and disposed of in an appropriate fashion.

3. Preparedness: A description of the planned onsite equipment for spill response and its location. Spill clean-up materials and equipment appropriate to the type and quantity of hazardous materials shall be located onsite and personnel made aware of their location. Key employees shall be trained in spill response procedures in accordance with local, State, and federal regulations. Material safety data sheets (MSDSs) shall be kept onsite during construction and operation of the solar farm. Spill response materials including brooms, dust pans, mops, rags, gloves, absorbent pads/pillows/socks, sand/absorbent litter, sawdust, and plastic and metal containers will be kept onsite. The spill response plan shall also specify:

   a. The project owner's health and safety training plan, Department of Transportation–required training, and spill response training

   b. Local, State, and federal regulatory agency reporting procedures and phone numbers, as well as emergency response contractor contact information and local hospital contact information

4. Response Procedures: An outline of emergency response procedures, including physical spill clean-up procedures, reporting requirements, and stabilization techniques. Spill guidelines shall include the following:

   a. All spills shall be immediately cleaned up upon discovery. Spills will be reported to the BLM in writing within 24 hours, and by phone immediately.

   b. The spill area shall be kept well ventilated and personnel shall wear the appropriate protective clothing to prevent injury when cleaning up a spill

   c. Spills of hazardous materials shall be reported to the appropriate local, State, and federal authorities and/or regulatory agencies as required by law

   d. All vehicles leaking oil or fluids shall be scheduled for maintenance, and drip plans shall be placed under the leak when parked prior to the maintenance event

e. All spill and clean up material will be removed from site as soon as can be arranged and taken to a legal disposal facility. This paperwork will be submitted to the BLM.

5. A description of spill prevention and response measures for transportation of substation transformer oil to and from the project site. Spill guidelines shall include the following:

   a. The transformer oil transportation route shall be mapped with all navigable or potentially navigable waters adjacent to or perpendicular to the route

   b. A list of contact information for the appropriate local, State, and federal authorities shall be located in the transportation vehicle(s) at all times

   c. Transformer oil spills during transportation shall be immediately reported to the appropriate local, State, and federal authorities

The spill response plan shall be implemented during construction, operation, and decommissioning. In addition, during the life of project operation, the project shall not use any hazardous materials not specified in the plan or in greater quantities than specified, unless approved in advance by BLM.

MM PHS-4 **An Environmental Health and Safety Plan shall be prepared.** The project owner shall develop an Environmental Health and Safety Plan for the construction and operation of the project to ensure it includes all activities and compliance with all local, state and federal regulatory requirements. Illness and Injury Prevention Programs will be developed for construction and operation. The project owner shall prepare the plan for approval by the BLM. The project owner shall be responsible for implementing the approved plan.

The plan shall include the following:

1. An organizational structure;
2. A description of site characteristics and a job hazard analysis;
3. A description of site controls that includes a site map; identification of site access restrictions, site security, site work zones, any required exclusion zones, any contaminant reduction zones, relevant support zones, and site communications;
4. Training requirements and documentation of training;
5. Medical surveillance;
6. Personal protective equipment;
7. Exposure monitoring;
8. Heat stress;
9. Spill containment;
10. Decontamination;
11. Emergency response;
12. Relevant standard operating procedures; and
13. Confined space (if relevant).

MM PHS-5 **A project-specific Emergency Response and Inventory Plan shall be prepared**. The project owner shall provide the County of Riverside with a project-specific Emergency Response and Inventory Plan before construction begins. The project owner shall prepare the plan for approval by the BLM and review and comment by the County of Riverside. The project owner shall be responsible for implementing the approved plan.

The plan shall include the following:

1. An evacuation plan;
2. A list of emergency contacts;
3. A list of emergency resources;
4. Any special arrangements with emergency responders;
5. Relevant emergency procedures;
6. Post-incident reporting/recording responsibilities;
7. Identification of site components that may be vulnerable to earthquakes with procedures for inspection or isolation after a seismic event;
8. A list of on-site emergency equipment; and
9. An employee training plan that documents training areas and capabilities.

MM PHS-6 **Ensure proper disposal or recycling of photovoltaic panels and other infrastructure**. In order to ensure that disposing of project structures does not pose a risk to human health or the environment, the project owner shall develop a recycling and disposal plan for photovoltaic panels and other infrastructure, including support structures, treated wood poles, transformers, and inverters. This plan shall apply to components that are damaged or otherwise require replacement during project construction and operation and shall also apply to project decommissioning. The recycling plan shall specify means by which these project components will be disposed of in a manner that will not pose a risk to human health or the environment. Any sale or transfer of photovoltaic panels and support structures shall be required to transfer the recycling and disposal plan and obligations along with project infrastructure. The recycling plan shall apply to all project infrastructure. The project owner shall implement the recycling plan at the end of the project's useful lifetime.

Special circumstances for cadmium-containing infrastructure: For any cadmium-containing photovoltaic panels that are not already subject to a pre-funded take back and recycling program, the project owner must further:

1. Pre-identify a recycler of CdTe photovoltaic panels that is either in the United States, and therefore subject to regulations governing hazardous materials and health and safety regulations, or is ISO 14001 certified.
2. Provide a unique identification number for each CdTe module that is permanently affixed to the module and made of a material that will not fade or rust;

3. Register the location of each CdTe module with the County Department of Planning and Building; and
4. Label each CdTe module with the contact information for the County Department of Planning and Building.

MM PHS-7 **Develop and implement fire services agreement with Riverside County Fire Department and BLM.** The project owner shall enter into an agreement with Riverside County Fire Department/CAL FIRE and BLM. To address project impacts, the project owner, based on consultation with CAL FIRE, shall ensure that either (a) a sufficient number of permanent project employees are trained as volunteer fire fighters or (b) the project owner will provide fire protection training to its permanent employees. This will allow the project's on-site work force to combat and be first responders to any potential fires occurring on-site or within the vicinity of the project site prior to back up by CAL FIRE staff.

MM FIRE-1 **A project-specific Fire Prevention Plan shall be developed and implemented**. [Full text in Section 4.8, Fire and Fuels Management]

MM PHS-8 **Develop and implement plan to address munitions and explosives of concern (MEC).** The plan shall include the following;

1. Historical Research. The project owner shall take steps to gather detailed information on the history of military activities within the proposed project footprint. This shall include further research regarding prior MEC removals that may have been issued in the past for certain areas by military or other investigating entities and archival research with the cooperation of the Department of Defense.
2. Department of Defense Consultation. The project owner shall consult with the Department of Defense on the likely occurrence of, and safe treatment of, MECs in the project area. As a result of the historical occurrence of military training activities throughout the Desert Training Center/California-Arizona Maneuver Area, potentially including the project area, this MEC consultation and archival research shall address the entire project footprint.
3. Further Assessment as Appropriate. After initial research and consultation with Department of Defense personnel, the project owner shall undertake, as necessary, further appropriate above and below-ground assessments, under the direction of an expert consultant team (as determined by BLM), to delineate areas for further investigation and possible MEC removal. The project owner, under direction from the BLM, shall determine which site-specific in-field investigative techniques and methodologies will be utilized to investigate and resolve potential MEC issues prior to project construction.
4. MEC Safety Training. All construction personnel shall receive appropriate MEC health and safety awareness training to ensure that they know what actions to take if unanticipated MEC or other suspicious articles are encountered during construction.

MM PHS-9 **Use Licensed Herbicide Applicator.** During the construction and operational phases of the project, the contractor or personnel applying herbicides shall have all the appropriate State and local herbicide applicator licenses and comply with all State and local regulations regarding herbicide use, including the BLM's 2007 *Vegetation Treatments Using Herbicide Programmatic Final Environmental Impact Statement*. Herbicides shall be mixed and applied in conformance with the product manufacturer's directions. The herbicide applicator shall be equipped with splash protection clothing and gear, chemical resistant gloves, chemical spill/splash wash supplies, and material safety data sheets (MSDSs) for all hazardous materials to be used. To minimize harm to wildlife, vegetation, and waterbodies, herbicides shall not be applied directly to wildlife, products identified as non-toxic to birds and small mammals shall be used if nests or dens are observed, and herbicides shall not be applied within 50 feet of any surface waterbody when water is present. Herbicides shall not be applied if it is raining at the site, rain is imminent, or the target area has puddles or standing water. Herbicides shall not be applied when wind velocity exceeds 10 miles per hour. If spray is observed to be drifting to a non-target location, spraying shall be discontinued until conditions causing the drift have abated.

Prior to any herbicide application, the herbicide applicator shall contact the Environmental Monitor to show where work will be done and to receive information/training about potentially sensitive biological resources that may be within the area to be sprayed and methods to apply to minimize those impacts. A Worker's Training Manual shall be prepared and include a provision on herbicide application. Once facility operation commences, this Manual shall be given to any herbicide applicator to be reviewed prior to spraying.

Residual Impacts and Unavoidable Adverse Effects

With the implementation of proposed mitigation, the construction, operation and decommissioning of the proposed solar facility would not result in any unavoidable adverse effects to public health and safety.

4.13.7 Alternative 5 – Solar Project Excluding WHMA

Alternative 5 would exclude the portion of the site which is within the Palen-Ford Wildlife Habitat Management Area.

Construction

Construction components of Alternative 5 would be identical to those of Alternative 4.

Although less land would be disturbed under Alternative 5 than under Alternative 4, required construction activities and materials would be essentially the same as those described for Alternative 4 above. Therefore, the effects related to public health and safety from construction of Alternative 5 would be the same as those under Alternative 4.

Operation and Maintenance

Operation and maintenance activities and equipment required under Alternative 5 would be essentially the same as those under Alternative 4.

The effects resulting from operation and maintenance of Alternative 5 would be the same as those discussed under Alternative 4.

Decommissioning

Decommissioning activities under Alternative 5 would be essentially the same as those under Alternative 4.

The effects resulting from decommissioning of Alternative 5 would be the same as those discussed under Alternative 4 since the same plans for protecting worker safety and the environment would be required.

Mitigation Measures

The measures identified for Alternative 4 would also be implemented under Alternative 5.

Residual Impacts and Unavoidable Adverse Effects

With the implementation of proposed mitigation, the construction, operation and decommissioning of Alternative 5 would not result in any unavoidable adverse effects to public health and safety.

4.13.8 Alternative 6 – Reduced Footprint Solar Project

Alternative 6 would exclude the 155-acre southern parcel of the project and a small portion of the northern parcel that contains sensitive plant species, crucifixion thorn, as shown on Figure 2-10, Alternative 6: Reduced Footprint Solar Project, in Appendix A.

Construction

Construction components of Alternative 6 would be identical to those of Alternative 4.

Although less land would be disturbed under Alternative 6 than under Alternative 4, required construction activities and materials would be essentially the same as those described for Alternative 4 above. Therefore, the effects related to public health and safety from construction of Alternative 6 would be the same as those under Alternative 4.

Operation and Maintenance

Operation and maintenance activities and equipment required under Alternative 6 would be essentially the same as those under Alternative 4.

The effects resulting from operation and maintenance of Alternative 6 would be the same as those discussed under Alternative 4.

Decommissioning

Decommissioning activities under Alternative 6 would be essentially the same as those under Alternative 4.

The effects resulting from decommissioning of Alternative 6 would be the same as those discussed under Alternative 4 since the same plans for protecting worker safety and the environment would be required.

Mitigation Measures

The measures identified for Alternative 4 would also be implemented under Alternative 6.

Residual Impacts and Unavoidable Adverse Effects

With the implementation of proposed mitigation, the construction, operation and decommissioning of Alternative 6 would not result in any unavoidable adverse effects to public health and safety.

4.13.9 Alternative 7 – High-Profile Reduced Footprint Solar Project

Alternative 7 would be constructed within the same project boundaries as Alternative 6. Alternative 7 would encompass an estimated 1,044 acres and would be an estimated 150 MW nominal capacity project. Project details are the same as for Alternative 4, with the only exception being the overall height of the panels for Alternative 7. Alternative 7 would use high-profile single-axis tracking panels that would have a total height of 15 feet.

Construction

Construction components of Alternative 7 would be identical to those of Alternative 4.

Although less land would be disturbed under Alternative 7 than under Alternative 4, required construction activities and materials would be essentially the same as those described for Alternative 4 above. Therefore, the effects related to public health and safety from construction of Alternative 7 would be the same as those under Alternative 4.

Operation and Maintenance

Operation and maintenance activities and equipment required under Alternative 7 would be essentially the same as those under Alternative 4.

The effects resulting from operation and maintenance of Alternative 7 would be the same as those discussed under Alternative 4.

Decommissioning

Decommissioning activities under Alternative 7 would be essentially the same as those under Alternative 4.

The effects resulting from decommissioning of Alternative 7 would be the same as those discussed under Alternative 4 since the same plans for protecting worker safety and the environment would be required.

Mitigation Measures

The measures identified for Alternative 4 would also be implemented under Alternative 7.

Residual Impacts and Unavoidable Adverse Effects

With the implementation of proposed mitigation, the construction, operation and decommissioning of Alternative 7 would not result in any unavoidable adverse effects to public health and safety.

4.13.10 Alternative A – No Gen-Tie

Under Alternative A, no gen-tie line would be constructed or operated as part of the DHSP. Therefore, there would be no effects to public health or safety related to construction, operations and maintenance, or decommissioning.

Mitigation Measures

No mitigation measures for public health and safety are required for Alternative A.

Residual Impacts and Unavoidable Adverse Effects

No public health and safety effects would result from the implementation of Alternative A.

4.13.11 Alternative B – Proposed Gen-Tie (Shared Towers)

Under Alternative B, the proposed gen-tie would utilize transmission infrastructure developed for the DSSF project by sharing the approved transmission towers. However, because construction of the DSSF gen-tie line had not yet begun in September 2011, this analysis assumes that the proposed project would include all construction, operations, and decommissioning activities for Alternative B.

Construction

Stringing the proposed gen-tie line would occur concurrently with construction of the gen-tie line for DSSF. However, since this construction had not yet begun in September 2011, this analysis assumes that the Proposed Action would require all related construction activities.

The types of construction activities under Alternative B would be similar to those for Alternative 4; however, substantially less construction would be required for the gen-tie than for the project and no solar modules would be involved. Therefore, there would be less potential for effects on public health and safety.

Operation and Maintenance

Operation and maintenance activities under Alternative B would be essentially the same as those for Alternative 4.

Effects of operation and maintenance under Alternative B would be similar to those of Alternative 4; however, less maintenance activity would be required for the gen-tie than for the project, and no solar modules would be involved. Therefore, there would be less potential for effects to public health and safety.

Decommissioning

Decommissioning activities under Alternative B would be similar to those for Alternative 4; however, less decommissioning would be required for the gen-tie than for the solar facility and no solar modules would be involved. Therefore, there would be fewer potential effects to public health and safety.

Mitigation Measures

Measures identified for Alternative 4 would also be implemented for Alternative B.

Residual Impacts and Unavoidable Adverse Effects

The construction, operation and maintenance, and decommissioning of Alternative B would not result in any unavoidable adverse effects.

4.13.12 Alternative C – Separate Transmission Towers within Same ROW

Under Alternative C, the gen-tie line would parallel the approved DSSF gen-tie line, and would be located on separate towers within the same ROW. The same number of towers in a nearly identical alignment to that of the DSSF towers would be constructed.

Construction

Construction effects would be the same as those of Alternative B.

Operation and Maintenance

Operations and maintenance effects would be the same as those of Alternative B.

Decommissioning

Decommissioning effects would be the same as those of Alternative B.

Mitigation Measures

Measures identified for Alternative 4 would also be implemented for Alternative C.

Residual Impacts and Unavoidable Adverse Effects

The construction, operation and maintenance, and decommissioning of Alternative C would not result in any unavoidable adverse effects.

4.13.13 Alternative D – Cross-Valley Alignment

Construction, operation and maintenance, and decommissioning of Alternative D would be the same as described for Alternatives B and C, except it would require slightly less temporary and permanent ground disturbance.

Construction

Effects on public health and safety would be slightly reduced under Alternative D due to the need for slightly less ground disturbance, noted above. However, with consideration to the over-

all project, this difference in potential effects would be negligible. Construction effects to would be the same as described for Alternative B.

Operation and Maintenance

Potential effects to public health and safety from operations and maintenance would be the same as those from Alternative B.

Decommissioning

Decommissioning of Alternative D may result in slightly decreased effects to public health and safety compared to Alternatives B and C because of slightly decreased land disturbance. However, as with construction, this difference would be negligible. Decommissioning effects to public health and safety would be essentially the same as those from Alternative B.

Mitigation Measures

Measures identified for Alternative 4 would also be implemented for Alternative D.

Residual Impacts and Unavoidable Adverse Effects

The construction, operation and maintenance, and decommissioning of Alternative D would not result in any unavoidable adverse effects.

4.13.14 Alternative E – New Cross-Valley Alignment

Construction, operation and maintenance, and decommissioning of Alternative E would be the same as described for Alternative D.

Construction

Effects on public health and safety would be the same under Alternative E as described above for Alternative D.

Operation and Maintenance

Effects on public health and safety would be the same under Alternative E as described above for Alternative D.

Decommissioning

Effects on public health and safety would be the same under Alternative E as described above for Alternative D.

Mitigation Measures

Measures identified for Alternative 4 would also be implemented for Alternative E.

Residual Impacts and Unavoidable Adverse Effects

The construction, operation and maintenance, and decommissioning of Alternative E would not result in any unavoidable adverse effects.

4.13.15 Cumulative Effects

Geographic Scope

The geographic area considered for cumulative effects on Public Health and Safety is within the I-10 corridor from Indio to Blythe, California for emergency response. A number of alternative energy projects are proposed in the region, primarily east of the project site area (see Tables 4.1-1 and 4.1-2 in Section 4.1 for complete list of existing and foreseeable projects included in the cumulative analysis approach). The geographic area considered for cumulative effects for hazards includes the immediate solar facility boundaries and the access routes to the gen-tie line and alternatives and the primary access route to the solar facility site.

Past, Present, and Reasonably Foreseeable Future Projects

Existing and foreseeable projects within the I-10 corridor are listed in Tables 4.1-1 and 4.1-2 and could combine with the project and result in effects to emergency response of the proposed project and alternatives. Table 4.13-2 lists all existing and foreseeable projects that could combine with hazards to result in cumulative effects.

Table 4.13-2. Cumulative Projects within the Geographic Scope of Cumulative Analysis

Resource Area / BLM Program Area	Geographic Area of Consideration	Elements to Consider	BLM Authorized and Other Known County Projects/Actions/Activities
Public Health and Safety	Within the I 10 corridor from Indio to Blythe, California for emergency response and within the proposed project and alternatives and access routes for hazards	Hazardous spills and emergencies or fires at multiple locations	All projects listed in Table 4.1-1 and 4.1-2 for emergency response. The following projects for hazardous spills: • Desert Sunlight Solar Farm • Desert Center Solar Project • Chuckwalla Valley Racetrack • Silverado Power Solar Project • SCE Red Bluff Substation (Alternatives B through E) • I-10 (Alternatives B through E)

Cumulative Effects Analysis

Hazardous material spills or safety issues related to emergency response during construction and operation of the proposed project or alternatives could potentially contribute to cumulative effects when combined with the impacts of other foreseeable projects in the area. In particular, if hazardous material spills, fires, or other emergencies occurred at multiple project sites simultaneously, emergency response resources could be overwhelmed and unable respond effectively. However, it is unlikely that two or more facilities would require emergency response at the same time, and with the implementation of mitigation measures required for the proposed project or Alternatives 5 through 7 and C through E, the project would not substantially contribute to cumulative effects related to emergency response. Implementation of emergency response plans and fire management plans would also be standard protocols for other facilities in the region and these plans would likely be similarly effective in ensuring no cumulative effects related to emergency response or fire.

Because the project would comply with all relevant regulatory requirements regarding use and disposal of hazardous materials, the incremental effects of the project related to exposing workers, the public, or the environment to hazardous materials would be minimal. Mitigation

Measures PHS-1 through PHS-6 (Hazardous Materials Management Plan, BMPs for hazardous materials, SPCC Plan, Environmental Health and Safety Plan, Emergency Response and Inventory Plan, Recycling and Disposal of Panels) would also reduce these potential effects. Other foreseeable renewable energy projects in the vicinity, such as Palen Solar Energy and the DSSF project (directly north of the DHSP) are subject to the same regulatory requirements related to the handling, storage, and disposal of hazardous materials and wastes. As are result, the collective impact from those projects to public health and safety is not expected to be substantial.

Because construction and project development would not occur under the No Action and No Project Alternatives (Alternatives 1, 2, and 3) or Alternative A (No Gen-Tie), these alternatives would not contribute to cumulative effects. Alternative B would not contribute to cumulative effects, as the cumulative scenario assumes concurrent construction of the Desert Sunlight approved gen-tie and Alternative B conductor stringing using the same crew at the same time, with no additional work required for Alternative B beyond what is required for the Desert Sunlight gen-tie.

4.13.16 CEQA Considerations

CEQA Significance Criteria

The significance criteria listed below are from the Environmental Checklist Form in Appendix G of the CEQA Guidelines. These criteria are used to determine whether the project or alternative would result in significant impacts to public health or safety under CEQA. Impacts to public health and safety would be significant if the project:

H-1 Increases exposure of humans or the environment to potentially hazardous levels of chemicals due to the disturbance of contaminated soils or to the discharge or disposal of hazardous materials into soils;

H-2 Increases significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;

H-3 Creates a significant hazard to the public or the environment through reasonably foreseeable upset and accidental conditions involving the release of hazardous materials into the environment;

H-4 Is located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 (i.e., the Cortese List of underground leaking storage tanks) that would create a significant hazard to the public or environment;

H-5 Impairs implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan;

H-6 Mobilizes contaminants in the soil or groundwater, creating potential pathways of exposure to humans or wildlife that would result in exposure to contaminants at levels that would be expected to be harmful;

H-7 Exposes workers to contaminated or hazardous materials at levels in excess of those permitted by the Federal Occupational Safety and Health Administration (OSHA) in CFR 29, Part 1910, and the California Occupational Safety and Health Agency

(Cal/OSHA) in California Code of Regulations (CCR) Title 8, or expose members of the public to direct or indirect contact with hazardous materials from proposed project construction or operations;

H-8 Exposes people or structures to a significant risk of loss, injury, or death involving electrocution or cause excessive exposure to wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands;

H-9 Results in safety hazards to people that may be located in the vicinity of private air strips or airports located within 2 miles of the project; or

H-10 Exposes people to significant hazards or structures to loss as a result of intentionally destructive acts.

For all project alternatives, the following criterion was determined to be inapplicable or to result in no impact under alternatives. The determination regarding this significance criterion is discussed below and then this significance criterion is not considered further.

- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.

No component associated with any project alternative is located within one-quarter of a mile of the closest school, the Eagle Mountain Elementary School. There would be no impacts under this criterion from any component of the project.

CEQA Significance Determination

Alternatives 1, 2, 3 and A would not involve construction of the project or gen-tie line. These alternatives would have no impacts on public health and safety.

Alternative 4

With regard to Criterion H-1, the project site does not contain any known contamination that would be disturbed and increase exposure of workers, the public, or the environment to hazardous chemicals. Any previously unknown contaminated soils that may be encountered would be treated and disposed of in accordance with applicable regulations. Therefore, impacts related to Significance Criterion H-1 would be less than significant.

With regard to Criterion H-2, all hazardous materials that would be transported, used, or disposed of during construction, operation, and decommissioning of the project would be dealt with in accordance with all applicable regulatory requirements. With the implementation of Mitigation Measures PHS-1 through PHS-6, impacts related Significance Criterion H-2 would be less than significant.

With regard to Criterion H-3, all hazardous materials that would be transported, used, or disposed of during construction, operation, and decommissioning would be dealt with in accordance with all applicable regulatory requirements. Mitigation Measure PHS-3 specifically addresses the components of the required Spill Prevention Control and Countermeasure (SPCC) Plan. With the implementation of Mitigation Measures PHS-1 through PHS-6, impacts related Significance Criterion H-3 would be less than significant. Mitigation Measure PHS-8 spe-

cifically addresses potential hazards related to munitions and explosives of concern (MEC) that could be found in the project area.

With regard to Criterion H-4, based on the Phase I ESA conducted for the DSSF project, the DHSP site and the gen-tie line routes do not contain any hazardous materials sites pursuant to Government Code Section 65962.5. Therefore, the project would have no impact related to Significance Criterion H-4.

With regard to Criterion H-5, the project could potentially impact the implementation of emergency response plans; however, with the implementation of Mitigation Measures PHS-4 (Environmental Health and Safety Plan) and PHS-5 (Emergency Response and Inventory Plan), this impact would be less than significant.

For Criterion H-6, see Criteria H-1 and H-4. No known soil contaminants would be mobilized by ground disturbance associated with the proposed project. There would be no impact related to Significance Criterion H-6.

For Criterion H-7, see also Criterion H-2. All hazardous materials that would be transported, used, or disposed of during project construction, operation, and decommissioning would be dealt with in accordance with all applicable regulatory requirements. There is no known contamination that on the project site that would expose workers to hazardous materials. With the implementation of Mitigation Measures PHS-1 through PHS-6, impacts related Significance Criterion H-7 would be less than significant.

With regard to Criterion H-8, the project could increase the risk of wildfire because vehicles used for the project could cause combustion of dry vegetation. However, with the implementation of Mitigation Measure FIRE-1, MM PHS-5, and MM VEG-9 (Prepare Integrated Weed Management Plan), impacts related to Significance Criterion H-8 would be less than significant.

With regard to Criterion H-9, the project would not create safety hazards for the one small private air strip or the special use airport in the vicinity. The project would have no aboveground structures that would increase safety hazards to the two private air strips. No impacts would occur related to Significance Criterion H-9.

With regard to Criterion H-10, although the project would introduce facilities that could be subject to intentionally destructive acts, with the implementation of MM PHS-5 impacts related to Significance Criterion H-10 would be less than significant.

Cumulative Impacts. The project would pose potential risks to public health and safety related to use and disposal of hazardous materials. MM PHS-1 through MM PHS-6 would minimize these impacts, and the impacts would be site-specific and would not combine with similar effects from other projects to produce cumulative impacts. Therefore, the project would not represent a considerable contribution to any cumulative impacts to public health and safety related to hazardous materials.

The project could potentially contribute to overburdening emergency response resources; however, implementation of MM PHS-4 (Environmental Health and Safety Plan), MM PHS-5 (Emergency Response and Inventory Plan), and MM FIRE-1 (Fire Prevention Plan) would ensure that project personnel are trained to appropriately report and respond to emergencies. MM PHS-7 (fire services agreement) would ensure that there are adequate staff/volunteers to

respond to emergencies. With these measures the project would not represent a considerable contribution to cumulative impacts related to emergency response.

Alternative 5

Significance Criteria H-1 through H-10 would be the same for Alternative 5 as for Alternative 4 as discussed in Section 4.13.7. The same mitigation measures would apply as appropriate.

Alternative 6

Significance Criteria H-1 through H-10 would be the same for Alternative 6 as for Alternative 4 as discussed in Section 4.13.8. The same mitigation measures would apply as appropriate.

Alternative 7

Significance Criteria H-1 through H-10 would be the same for Alternative 7 as for Alternative 4 as discussed in Section 4.13.8. The same mitigation measures would apply as appropriate.

Alternative B

Significance Criteria H-1 through H-10 would be the essentially same for Alternative B as for Alternative 4 as discussed in Section 4.13.11. The same mitigation measures would apply as appropriate.

Alternative C

Significance Criteria H-1 through H-10 would be essentially the same for Alternative C as for Alternative 4 as discussed in Section 4.13.12. The same mitigation measures would apply as appropriate.

Alternative D

Significance Criteria H-1 through H-10 would be essentially the same for Alternative D as for Alternative 4 as discussed in Section 4.13.13. The same mitigation measures would apply as appropriate.

Alternative E

Significance Criteria H-1 through H-10 would be essentially the same for Alternative E as for Alternative 4 as discussed in Section 4.13.14. The same mitigation measures would apply as appropriate.

4.14 RECREATION

4.14.1 Methodology for Analysis

This section addresses whether the construction, operation, and decommissioning of the proposed project and alternatives would directly or indirectly impact recreational opportunities including off-highway vehicle travel, hiking, backpacking and long-term camping in established federal, state, or local recreation areas and/or wilderness areas.

4.14.2 Applicant Measures

No applicant measures, project design features, best management practices, or other measures related to recreation are proposed.

4.14.3 Alternative 1 – No Action (No Plan Amendment)

Under Alternative 1, the Desert Harvest Solar Project (DHSP) would not be approved by the BLM, and BLM would not amend the CDCA Plan. As a result, no solar energy project would be constructed on the project site, and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended. Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no ground disturbance. As a result, effects from the project would not occur.

4.14.4 Alternative 2 – No Project Alternative (with Plan Amendment to Find the Site Suitable for Solar Energy Development)

Under Alternative 2, the DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site available for future solar energy development. As a result, the DHSP would not be constructed on the project site and BLM would manage the site consistent with the amended land use designation in the CDCA Plan. It is possible that, as a result of the CDCA Plan amendment, that in the future another solar energy generation project could be proposed with impacts similar to the DHSP, however, such impacts are speculative at this time, and no effects from the DHSP would occur.

4.14.5 Alternative 3 – No Project Alternative (with Plan Amendment to Find the Site Unsuitable for Solar Energy Development)

Under Alternative 3, the DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site unavailable for future solar energy development. As a result, the DHSP would not be constructed on the project site and BLM would manage the site consistent with the amended land use designation in the CDCA Land Use Plan. No effects from the DHSP would occur.

4.14.6 Alternative 4 – Proposed Solar Project

Construction

Direct Effects

Construction of Alternative 4 would develop 1,208 acres of undeveloped multiple use BLM land as a solar field. As described in Chapter 3.14, recreation use in the project area is minimal. Most recreation use is related to driving for pleasure, sightseeing, rock hounding, hiking, hunting/target shooting, or photography. Most visitors are local residents of Desert Center or Blythe. The project area included in Alternative 4 would be exclusively used for solar energy generation, and all recreation would be prohibited during construction. As described in section 3.14, there are no open access areas that intersect Alternative 4. However, three open routes intersect the solar facility site and would result in a maximum of approximately 5.7 miles of trail closures in the area. These routes do not represent essential components of the local trail network and are relatively small compared to the total available length of routes in the area. Direct effects to this recreational use would thus be minimal.

Indirect Effects

Eliminating recreational use of the Alternative 4 site could result in some minimal increase of recreational use outside the project boundary. In addition, the construction of the proposed solar facility would result in a temporary increase in population due to the influx of construction workers. The solar facility and gen-tie line could require a peak construction workforce of up to 315 workers. Construction workers are expected to travel to the site from various locations, chiefly from within Riverside and San Bernardino Counties. During construction, workers might temporarily relocate to the project vicinity and use local recreation areas such as the recreational opportunities in Lake Tamarisk. During the two-year construction period, the average number of solar facility construction workers is anticipated to be 100, and the maximum number is anticipated to be 250; the gen-tie workforce will average 30 employees and no more than 65 employees at any one point. The Desert Lily ACEC, Joshua Tree Wilderness, and JTNP are in the immediate vicinity of the project site. Use of these recreation areas by temporary construction workers is not expected to affect recreational use of the Desert Lily ACEC, Joshua Tree Wilderness, or JTNP by the general public, as construction worker use is expected to be minimal.

Because construction of the project would alter the existing character of the project study area, it may affect surrounding recreational uses as a result of the altered viewshed, including a substantial adverse effect on the wilderness experience of dispersed and occasional visitors to the Joshua Tree Wilderness Area, located 1.8 miles from the solar facility boundary at its nearest point. Noise impacts would not occur due to the distance between the Joshua Tree Wilderness Area and the project site. These issues are addressed in detail in Sections 4.19 (Visual Resources) and 4.12 (Noise), respectively. In addition, the effects of the proposed project on JTNP and the Joshua Tree Wilderness Area for all resources are addressed in Section 4.17 (Special Designations). A 2010 JTNP visitor survey revealed that the most important attributes/resources to visitor groups in the Park as a whole were (1) Views without development, (2) Clean air, (3) Natural quiet/sounds of nature, (4) Desert plants/wildflowers, (5) Native wildlife, (6) Access to rock formations, (7) Solitude, (8) Dark, starry night skies, and (9) Access to historical/cultural sites (Jette et al. 2011). Therefore, project construction-related increased ambient night lighting,

daytime dust, or noise above a 35 dBA threshold within the Park boundaries would indirectly affect the recreational resources within the Park.

Fugitive dust from construction would create a temporary visual distraction for a limited number of users of portions of recreational areas, although implementation of Mitigation Measure AIR-1 would restrict project-related generation of dust clouds within the Park and minimize dust in other special designation areas. Mitigation Measure AIR-4 would prevent other equipment emissions by limiting idling and setting standards for engines. Mitigation Measure NOI-2 would control construction noise relative to JTNP boundaries. Mitigation Measure VR-1 would require a number of actions, such as minimizing vegetation removal, to reduce construction related impacts to visual resources in nearby recreation areas. Mitigation Measure VR-6 would control night lighting within JTNP boundaries. Longer duration construction-related impacts would be addressed by Mitigation Measure VR-2, which requires successful revegetation of temporarily disturbed areas. This mitigation measure would improve views and the experience of natural character of recreation areas. It is also anticipated that some construction activity would take place at night, which would result in adverse night lighting visual effects to recreational areas. In order to ensure that substantial adverse construction lighting effects do not occur, Mitigation Measure VR-6 would reduce effects associated with night lighting by requiring strict lighting specifications and controls and operating parameters.

While the construction of the project is not expected to reduce visitation to the Joshua Tree Wilderness Area, it is expected to diminish the wilderness experience in proximal locations to the project within the Park and the Coxcomb Mountains throughout the two-year duration of construction.

Operation and Maintenance

The proposed operation and maintenance of Alternative 4 would have the same effects as those during construction, because the area would be used exclusively for solar generation and remain closed to recreation for the life of the project. In addition, although the visual effects of operation and the long term presence of the project would be substantially reduced compared with construction, the effects would be ongoing for 30 years, permanently diminishing the wilderness experience to dispersed recreational visitors to the Joshua Tree Wilderness Area. Mitigation Measure AIR-3 would require specific controls for operational dust emissions, thus reducing dust-related impacts throughout the project's operations phase. Mitigation Measures VR-3 and VR-4, which require the project design to reduce visual contrast with surrounding areas through surface treatments and other actions, and Mitigation Measure VR-5, which further reduces contrast through a screening vegetation buffer, would all serve to minimize visual impacts to recreational areas throughout the life of the project.

Decommissioning

During the decommissioning process, the same area would be closed to recreation as during construction, yielding the same effects. After revegetation is successful, decommissioning of Alternative 4 would ultimately result in the reopening of the area to other uses, including recreation, and it would improve the wilderness experience for visitors to Joshua Tree Wilderness Area that would be diminished during project construction and operation.

Mitigation Measures

The following mitigation measures would ensure that project-related effects to recreation would be reduced:

MM AIR-1 **Fugitive Dust Control Plan.** [full text of measure in Section 4.2]

MM AIR-3 **Control Operational Fugitive Dust.** [full text of measure in Section 4.2]

MM AIR-4 **Control Equipment Emissions**. [full text of measure in Section 4.2]

MM NOI-2 **No Net Increase in Ambient Noise within JTNP.** [full text of measure in Section 4.12]

MM VR-1 **Reduce Construction Related Impacts.** [full text of measure in Section 4.19]

MM VR-2 **Revegetation.** [full text of measure in Section 4.19]

MM VR-3 **Project Design to Reduce Visual Contrast.** [full text of measure in Section 4.19]

MM VR-4 **Surface Treatment of Project Structures/Buildings.** [full text of measure in Section 4.19]

MM VR-5 **Screening Vegetation Buffer.** [full text of measure in Section 4.19]

MM VR-6 **Night Light Control.** [full text of measure in Section 4.19]

Residual Impacts and Unavoidable Adverse Effects

Mitigation Measures VR-1 through VR-6 would reduce impacts to recreational users as a result of the altered viewshed. Nonetheless, residual impacts to recreational visitors to the Joshua Tree Wilderness Area would be the substantial diminishment of the wilderness experience from areas in which the project is visible. Implementation of Alternative 4 would result in an unavoidable adverse effect to the wilderness experience in proximal locations within the Coxcomb Mountains during construction, operation, and decommissioning.

4.14.7 Alternative 5 – Solar Project Excluding WHMA

Construction

Construction of Alternative 5 would create the same effects on recreation as Alternative 4. The Wildlife Habitat Management Area (WHMA) removed from the solar facility site under Alternative 5 does not provide additional recreational resources, and OHV route closures would also be a maximum of 5.7 miles. Therefore, effects from construction of Alternative 5 would not differ from those of Alternative 4.

Operation and Maintenance

The effects resulting from operating and maintaining Alternative 5 would be the same as those discussed under Alternative 4.

Decommissioning

The effects resulting from decommissioning Alternative 5 would be the same as those discussed under Alternative 4.

Mitigation Measures

The measures identified for Alternative 4 would also be implemented under Alternative 5.

Residual Impacts and Unavoidable Adverse Effects

Mitigation Measures VR-1 through VR-6 would reduce impacts to recreational users as a result of the altered viewshed. Nonetheless, residual impacts to recreational visitors to the Joshua Tree Wilderness Area would be the substantial diminishment of the wilderness experience from areas in which the project is visible. Implementation of Alternative 5 would result in an unavoidable adverse effect to the wilderness experience in proximal locations within the Coxcomb Mountains during construction, operation, and decommissioning.

4.14.8 Alternative 6 – Reduced Footprint Solar Project

Construction

Construction of Alternative 6 would create the similar effects on recreation as Alternative 4. The southwest portion of the solar facility, removed from the project under Alternative 6, would provide an additional 0.8 miles of open OHV routes, and could facilitate access to routes northwest of the project site. However, this difference does not represent a significant additional recreational resource, as the distance is very small relative to the surrounding route network, and there are other nearby routes providing access to the area northwest of the project site. Therefore, effects from construction of Alternative 6 would be substantially the same as Alternative 4.

Operation and Maintenance

The effects resulting from operating and maintaining Alternative 6 would be the same as those discussed under Alternative 4.

Decommissioning

The effects resulting from decommissioning Alternative 6 would be the same as those discussed under Alternative 4.

Mitigation Measures

The measures identified for Alternative 4 would also be implemented under Alternative 6.

Residual Impacts and Unavoidable Adverse Effects

Mitigation Measures VR-1 through VR-6 would reduce impacts to recreational users as a result of the altered viewshed. Nonetheless, residual impacts to recreational visitors to the Joshua Tree Wilderness Area would be the substantial diminishment of the wilderness experience from areas in which the project is visible. Implementation of Alternative 4 would result in an unavoidable

adverse effect to the wilderness experience in proximal locations within the Coxcomb Mountains during construction, operation, and decommissioning.

4.14.9 Alternative 7 – High-Profile Reduced Footprint Solar Project

Construction

Construction of Alternative 7 would create the similar effects on recreation as Alternative 4. The southwest portion of the solar facility, removed from the project under Alternative 7, provides an additional 0.8 miles of open OHV routes, and could facilitate access to routes northwest of the project site. However, this difference does not represent a significant additional recreational resource, as the distance is very small relative to the surrounding route network, and there are other nearby routes providing access to the area northwest of the project site. The high-profile of the panel height does not substantially change the altered viewshed and adverse effect on the wilderness experience. Therefore, effects from construction of Alternative 7 would be substantially the same as Alternative 4.

Operation and Maintenance

The effects resulting from operating and maintaining Alternative 7 would be the same as those discussed under Alternative 4.

Decommissioning

The effects resulting from decommissioning Alternative 7 would be the same as those discussed under Alternative 4.

Mitigation Measures

The measures identified for Alternative 4 would also be implemented under Alternative 7.

Residual Impacts and Unavoidable Adverse Effects

Mitigation Measures VR-1 through VR-6 would reduce impacts to recreational users as a result of the altered viewshed. Nonetheless, residual impacts to recreational visitors to the Joshua Tree Wilderness Area would be the substantial diminishment of the wilderness experience from areas in which the project is visible. Implementation of Alternative 4 would result in an unavoidable adverse effect to the wilderness experience in proximal locations within the Coxcomb Mountains during construction, operation, and decommissioning.

4.14.10 Alternative A – No Gen-Tie

Under Alternative A, no gen-tie line would be constructed or operated as part of the DHSP. Therefore, no recreational resources effects related to construction, operations and maintenance, or decommissioning would occur.

Mitigation Measures

No mitigation measures for effects to recreation are required for Alternative A.

Residual Impacts and Unavoidable Adverse Effects

No effects to recreation would result from the implementation of Alternative A.

4.14.11 Alternative B – Proposed Gen-Tie (Shared Towers)

Construction

Direct Effects

Construction of Alternative B would be located in an area that does not contain designated recreational areas or recreational activity, and its construction would not affect aforementioned recreational activities. Alternative B and related construction efforts would not inhibit any OHV routes, and would not affect existing OHV opportunities. Use of these recreation areas by temporary construction workers is not expected to affect recreational use of the Desert Lily Preserve ACEC, Joshua Tree Wilderness, or JTNP by the general public, as construction worker use is expected to be minimal.

Indirect Effects

Because construction of Alternative B would alter the existing character of the area, it may affect surrounding recreational uses as a result of the altered viewshed, including a substantial adverse effect on the wilderness experience of dispersed and occasional visitors to the Joshua Tree Wilderness Area and Alligator Rock ACEC. Construction activities would be visible from BLM recreational access roads, Desert Lily Preserve ACEC, Joshua Tree Wilderness in JTNP, and the Chuckwalla Mountains Wilderness. However, the Joshua Tree Wilderness Area is located 4.5 miles and the Alligator Rock ACEC is located 0.5 miles from Alternative B at the nearest point. Noise impacts would not occur and visual impacts would be minimal due to the distance between the Joshua Tree Wilderness Area and Alligator Rock ACEC and the gen-tie line. These issues are addressed in detail in Sections 4.19 (Visual Resources) and 4.12 (Noise), respectively. In addition, the effects of the proposed project on JTNP, the Joshua Tree Wilderness Area, and Alligator Rock ACEC for all resources are addressed in Section 4.17 (Special Designations). The construction of Alternative B is not expected to reduce visitation to the Wilderness Area and it is expected to minimally diminish the wilderness experience throughout the duration of construction.

Operation and Maintenance

Direct Effects

Operation and Maintenance of Alternative B would be located in an area that does not contain designated recreational areas or recreational activity, and its operation would not affect aforementioned recreational activities. Operating and maintaining Alternative B would not inhibit any OHV routes.

Indirect Effects

The proposed operation and maintenance of Alternative B would have the same effects as those during construction, because the area would be used exclusively for the gen-tie line and remain closed to recreation for the life of the project. The visual effects of operation and the long term

presence of the gen-tie line would be substantially reduced compared with construction and would minimally diminishing the wilderness experience to dispersed recreational visitors to the Joshua Tree Wilderness Area and Alligator Rock ACEC.

Decommissioning

Direct Effects

Decommissioning Alternative B would neither limit existing recreational opportunities nor restore any recreational opportunities. Further review would be required if new recreational opportunities developed in the project area, but none are currently planned (BLM 2010).

Indirect Effects

During the decommissioning process, the same area would be closed to recreation as during construction, yielding the same effects. Decommissioning of Alternative B would ultimately result in the reopening of the area to other uses, including recreation, and it would enhance the wilderness experience for visitors to Joshua Tree Wilderness Area and Alligator Rock ACEC.

Mitigation Measures

Mitigation Measures VR-1 through VR-6 would also apply to Alternative B with respect to the transmission line component.

Residual Impacts and Unavoidable Adverse Effects

With implementation of Mitigation Measures VR-1 through VR-6 to reduce impacts to recreational users as a result of the altered viewshed and construction, the construction, operation and maintenance, and decommissioning of Alternative B would not result in any unavoidable adverse effects.

4.14.12 Alternative C – Separate Transmission Towers within Same ROW

Construction

Because Alternative C would be within the same ROW and follow the same path as Alternative B, construction effects of Alternative C would be the same as those described for Alternative B.

Operation and Maintenance

Operation and maintenance effects of Alternative C would be the same as those described for Alternative B.

Decommissioning

Decommissioning effects of Alternative C would be the same as those described for Alternative B.

Mitigation Measures

Mitigation Measures VR-1 through VR-6 would also apply to Alternative C with respect to the transmission line component.

Residual Impacts and Unavoidable Adverse Effects

With implementation of Mitigation Measures VR-1 through VR-6 to reduce impacts to recreational users as a result of the altered viewshed and construction, the construction, operation and maintenance, and decommissioning of Alternative C would not result in any unavoidable adverse effects.

4.14.13 Alternative D – Cross-Valley Alignment

Construction

Direct Effects

Construction of Alternative D would be located in an area that does not contain designated recreational areas or recreational activity, and its construction would not affect aforementioned recreational activities. Alternative D and related construction efforts would not inhibit any OHV routes.

Indirect Effects

Construction of Alternative D would not diminish access or availability of recreational opportunities in the project vicinity. Alternative D is located 4 miles from the nearest Joshua Tree Wilderness Area and would be located adjacent to an existing transmission line. Noise impacts would not occur due to the distance between the Joshua Tree Wilderness Area and Alternative D and visual impacts would be minimal. The construction of Alternative D is not expected to reduce visitation to the Wilderness Area and it is expected to minimally diminish the wilderness experience throughout the duration of construction.

Operation and Maintenance

Direct Effects

Operation and Maintenance of Alternative D would be located in an area that does not contain designated recreational areas or recreational activity, and its operation would not affect aforementioned recreational activities. Operating and maintaining Alternative D would not inhibit any OHV routes.

Indirect Effects

Operation and Maintenance of Alternative D would not diminish access or availability of recreational opportunities in the project vicinity.

Decommissioning

Direct Effects

Decommissioning Alternative D would neither limit existing recreational opportunities nor restore any recreational opportunities. Further review would be required if new recreational opportunities developed in the project area, but none are currently planned (BLM 2010).

Indirect Effects

Decommissioning of Alternative D would not diminish access or availability of recreational opportunities in the project vicinity.

Mitigation Measures

Mitigation Measures VR-1 through VR-6 would also apply to Alternative D with respect to the transmission line component.

Residual Impacts and Unavoidable Adverse Effects

With implementation of Mitigation Measures VR-1 through VR-6 to reduce impacts to recreational users as a result of the altered viewshed and construction, the construction, operation and maintenance, and decommissioning of Alternative D would not result in any unavoidable adverse effects.

4.14.14 Alternative E – New Cross-Valley Alignment

Construction

Direct Effects

Construction of Alternative E would be located in an area that does not contain designated recreational areas or recreational activity, and its construction would not affect aforementioned recreational activities. Alternative E and related construction efforts would not inhibit any OHV routes.

Indirect Effects

Construction of Alternative E would not diminish access or availability of recreational opportunities in the project vicinity. Alternative E is located 2.25 miles from the nearest Joshua Tree Wilderness Area and 0.5 miles from the southern-most point of the Desert Lily ACEC. Noise impacts would not occur due to the distance between the Joshua Tree Wilderness Area, the Desert Lily ACEC, and Alternative E. Visual impacts of Alternative E when viewed from the Joshua Tree Wilderness Area would be minimal. Visual impacts of Alternative E when viewed from the southern-most point of the Desert Lily ACEC would result in adverse and unmitigable impacts because the alternative would result in a moderate to high level of visual change and would not meet applicable Interim VRM Class III objectives.

Operation and Maintenance

Direct Effects

Operation and Maintenance of Alternative E would be located in an area that does not contain designated recreational areas or recreational activity, and its operation would not affect aforementioned recreational activities. Operating and maintaining Alternative E would not inhibit any OHV routes.

Indirect Effects

Operation and Maintenance of Alternative E would diminish the recreational experience of users visiting the Desert Lily ACEC due to the adverse and unmitigable visual impacts.

Decommissioning

Direct Effects

Decommissioning Alternative E would neither limit existing recreational opportunities nor restore any recreational opportunities. Further review would be required if new recreational opportunities developed in the project area, but none are currently planned (BLM 2010).

Indirect Effects

Decommissioning of Alternative E would not diminish access or availability of recreational opportunities in the project vicinity.

Mitigation Measures

Mitigation Measures VR-1 through VR-6 would also apply to Alternative E with respect to the transmission line component.

Residual Impacts and Unavoidable Adverse Effects

Mitigation Measures VR-1 through VR-6 would reduce impacts to recreational users as a result of the altered viewshed and construction impacts. Nonetheless, residual impacts to recreational visitors to the Desert Lily ACEC would be the substantial diminishment of the visual quality of the experience. Implementation of Alternative E would result in an unavoidable adverse effect to the recreational experience in proximal locations to the Desert Lily ACEC during construction, and operation.

4.14.15 Cumulative Effects

Geographic Scope

The geographic extent for the consideration of cumulative effects to recreation is the local and regional recreational opportunities along the I-10 corridor/eastern Riverside County described in Section 4.1.4, Cumulative Scenario Approach. Tables 4.1-1 and 4.1-2 list existing and reasonably foreseeable projects in this area that would impact the regional recreational opportunities. Existing and reasonably foreseeable projects that would impact the local recreational opportunities include renewable projects such as the DSSF, the Silverado Power Solar Project, Desert Center 50 Solar Project, Palen Solar Power Project, Sol Orchard, and the Eagle Mountain Wind Project Met Towers and industrial projects such as the Eagle Mountain Pumping Plant, the Eagle Mountain Pumped Storage Project, the Eagle Mountain Landfill Project, Red Bluff Substation, DPV1, DPV2, and the Blythe Energy Project Transmission Line.

Table 4.14-1. Cumulative Projects within the Geographic Scope of Cumulative Analysis

Resource Area / BLM Program Area	Geographic Area of Consideration	Elements to Consider	BLM Authorized and Other Known County Projects/Actions/Activities
Recreation	I-10 Corridor between Indio and Blythe	Impacts to recreational users, impacts to the existing character of the project site	All projects listed in Table 4.1-1 and 4.1-2 for regional impacts. The following projects for local recreational impacts: • Desert Sunlight Solar Farm • Silverado Power Solar Project • Desert Center 50 Solar Project • Palen Solar Power Project • Sol Orchard • Eagle Mountain Wind Project Met Towers • Eagle Mountain Pumping Plant • Eagle Mountain Pumped Storage Project • Eagle Mountain Landfill Project • Red Bluff Substation • DPV1 • DPV2 • Blythe Energy Project Transmission Line.

Cumulative Effects Analysis

Existing conditions within the cumulative effects area reflect a combination of natural conditions and related recreational opportunities, and the effects of past actions. The existing cumulative conditions near the project study area include the existing projects listed in Table 4.1-1 (Existing Projects Along the I-10 Corridor [Eastern Riverside County]) in Section 4.1.4, Cumulative Scenario Approach. These include existing recreational opportunities offered by BLM such as campgrounds and the Midland Long-Term Visitor Area.

The majority of effects to on-site and off-site recreational users resulting from construction and operation of the proposed project and alternatives would be minimal. As noted above, the proposed project and alternatives would be near Joshua Tree Wilderness. While the construction of the project is not expected to reduce visitation to the Wilderness Area, it is expected to substantially diminish the wilderness experience in proximal locations in which the project is visible within the Coxcomb Mountains throughout the two-year construction period and the 30- year operations period.

The Chuckwalla Valley Raceway, a private-use raceway, provides some recreational opportunities in the project vicinity. Operation of the raceway would not be affected by the proposed project and alternatives. Existing projects have not had a significant adverse cumulative effect on recreation. After decommissioning of the project, the project site would be available again for active or passive recreational use. Accordingly, the potential for incremental, project-specific, effects to result in a cumulative effect on recreation with other past, present, or reasonably foreseeable future actions is low.

Foreseeable projects in the project area are listed in Table 4.1-2 (Foreseeable Projects along the I-10 Corridor [Eastern Riverside County]). As shown in Table 4.1-2, about 30 projects have been proposed in the project study area. Nearly half of these have been approved or are under construction. Twenty of the projects are either renewable energy projects or transmission

projects associated with renewable energy. Seven of the energy projects in Table 4.1-2 are in the vicinity of the proposed project: Palen Solar Power Project, Desert Sunlight Solar Project (currently under construction), Desert Center 50, Sol Orchard, Silverado Power I, II, and III, Eagle Mountain Wind Project Met Towers, and Eagle Mountain Pumped Storage Project. These projects would add large and small-scale industrial, utility-related and other uses in the region, resulting loss of access to lands that are currently used for recreation. The DSSF is adjacent to the DHSP solar facility site, immediately to the north; its construction has resulted in the closure of small sections of OHV trails.

The proposed project and alternatives would alter the existing character of the project study area, and it may affect surrounding recreational uses as a result of the altered viewshed, including a substantial adverse effect on the wilderness experience of dispersed and occasional visitors to the Joshua Tree Wilderness Area. Three of the energy projects in Table 4.1-2 are as near or nearer to the Joshua Tree Wilderness Area, Desert Sunlight Solar Project, Eagle Mountain Wind Project Met Towers, and Eagle Mountain Pumped Storage Project. These projects would result in noise and visual impacts on the Joshua Tree Wilderness Area similar to or greater than the Proposed Action. While the construction of the projects is not expected to reduce visitation to the Wilderness Area, it is expected to substantially diminish the wilderness experience in proximal locations of the wilderness area within the Coxcomb Mountains where the Proposed Action and reasonably foreseeable future projects are visible throughout the duration of construction, operation, and decommissioning of the cumulative projects.

Within the larger California Desert District area, 567,882 acres potentially available for recreational use could be lost to solar development and an additional 433,721 acres could be lost to wind development (BLM 2011). However, most of these projects in the California Desert District receive limited recreational use (BLM 2011). Within the I-10 corridor area used in this analysis (see Table 4.1-2), foreseeable projects could restrict or eliminate recreational use of over 52,000 acres. The recreation effects of the DHSP in combination with past, present, and proposed and reasonably foreseeable projects in eastern Riverside County would be substantial. These cumulative effects could substantially impact the recreation opportunities and experiences of users, communities, and regional populations.

The recreational effects for Alternatives 5, through 7 and C through E would be essentially the same as described for the proposed project and would represent substantial adverse cumulative effects. The No Action and No Project Alternatives (Alternatives 1, 2, 3, and A) would not contribute to any cumulative effects. In addition, Alternative B would not contribute to cumulative effects to recreation, as the cumulative scenario assumes concurrent construction of the Desert Sunlight approved gen-tie and Alternative B conductor stringing using the same crew at the same time, with no additional work required for Alternative B beyond what is required for the Desert Sunlight gen-tie.

4.14.16 CEQA Considerations

CEQA Significance Criteria

The significance criteria listed below are from the Environmental Checklist Form in Appendix G of the CEQA Guidelines. Under CEQA, the proposed project and alternatives would have significant impacts on recreation if they would:

REC-1 Increase the use of neighborhood and regional recreation facilities such that the physical deterioration of the facilities would be substantial or accelerated; or

REC-2 Include recreation facilities or require the construction or expansion of recreation facilities that might have an adverse physical effect on the environment.

CEQA Significance Determination

Alternatives 1, 2, 3, and A would not have any impacts related to recreation. Under these alternatives the DHSP would not be approved and would not be constructed. Lands would remain in their existing use.

As described above, construction, operation, and decommissioning of the proposed project and Alternatives 5 through 7 and B through E would not substantially increase the use of recreation facilities. Any current recreational use of the project site is extremely minimal; therefore, very little recreational use would be displaced by the DHSP. During construction, workers might relocate to the project vicinity and use local recreation facilities. However, minimal recreational use by a small number of temporary construction workers over the two-year construction period would not lead to substantial or accelerated physical deterioration of recreational facilities (Significance Criterion REC-1). A less-than-significant impact would occur. The proposed project and alternatives would not construct any recreation facilities that might adversely affect the environment (Significance Criterion REC-2). No impact would occur.

Cumulative Impacts. As described in Section 4.14.15, the effects of existing and proposed projects in the vicinity of the DHSP could have cumulatively considerable impacts on the Joshua Tree Wilderness Area and on recreational use of land in the I-10 corridor. The contribution of the DHSP to cumulative impacts would be significant because it would change the existing character of the project study area and result in a diminished wilderness experience in proximal locations within the Coxcomb Mountains.

Alternative B would not contribute to cumulative effects to recreation, as the cumulative scenario assumes concurrent construction of the Desert Sunlight approved gen-tie and Alternative B conductor stringing using the same crew at the same time, with no additional work required for Alternative B beyond what is required for the Desert Sunlight gen-tie.

4.15 SOCIAL AND ECONOMIC

4.15.1 Methodology for Analysis

In Sections 4.15.3 through 4.15.14, the direct and indirect effects relevant to social and economic concerns for each alternative are assessed. The baseline conditions for this analysis are presented in Section 3.15. The analysis provided in Section 4.15.15 describes the potential cumulative social and economic effects as a result of the proposed project and alternatives in combination with other plans, policies, and projects that would occur in the area, as described in Section 4.1.

4.15.2 Applicant Measures

The following Applicant Measures (AMs) have been incorporated as design features of the proposed project and shall be implemented to reduce adverse impacts associated with the project. In some cases, mitigation measures further clarify or expand on AM reporting requirements, timing of implementation, or other details where appropriate. Where there is a conflict between provisions of the mitigation measures imposed and the following AMs, the mitigation measures take precedence.

AM S-1 **Notification**. The public shall be notified of project activities and scheduling to inform the public of projected effects on the surrounding area. This notification will provide the public with the opportunity to plan their personal and business activities appropriately.

AM S-2 **Minimize Visual Impacts of Gen-Tie**. Project Applicant will align gen-tie lines along existing linear features (such as Kaiser Road) to minimize the social effects of potential visual effects.

4.15.3 Alternative 1 – No Action (No Plan Amendment)

Under Alternative 1, the proposed DHSP would not be approved by the BLM, and BLM would not amend the California Desert Conservation Area Plan 1980, as amended (CDCA Plan). As a result, no solar energy project would be constructed on the project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no ground disturbance. As a result, effects from the project would not occur.

4.15.4 Alternative 2 – No Project Alternative (with Plan Amendment to Find the Site Suitable for Solar Energy Development)

Under Alternative 2, the proposed DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site available for future solar energy development. As a result, the DHSP would not be constructed on the project site and BLM would manage the site consistent with the amended land use designation in the CDCA Plan. No effects from the DHSP would occur.

4.15.5 Alternative 3 – No Project Alternative (with Plan Amendment to Find the Site Unsuitable for Solar Energy Development)

Under Alternative 3, the DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site unavailable for future solar energy development. As a result, the DHSP would not be constructed on the project site and BLM would manage the site consistent with the amended land use designation in the CDCA Land Use Plan. No impacts from the DHSP would occur.

4.15.6 Alternative 4 – Proposed Solar Project

Construction

Direct Effects

Changes to Local Employment or Labor Force. Construction employment for Alternative 4 would include skilled or semi-skilled positions including laborers, craftsmen, supervisory personnel, supply personnel, and construction management personnel. As indicated in Table 3.15-4, Riverside and San Bernardino Counties are home to a large construction workforce in proportion to the project labor force requirements. Workers from Riverside and San Bernardino Counties would be recruited as much as practicable, but workers from other nearby counties might also contribute to the project.

The maximum required construction workforce of 250 personnel required for the proposed solar facility would comprise 0.4 percent of the total combined construction workforce of Riverside County (62,194 persons) and 0.5 percent of the total combined construction workforce of San Bernardino County (53,914 persons) (BEA 2011). Although the immediate surroundings of Alternative 4 have a small population, local construction workforces are generally available in the region because of larger surrounding population centers. Job fairs would be held in neighboring communities, including Palm Springs, Desert Center, and Blythe. A majority of site workers are expected to travel from these communities, with a minimum number of employees traveling on a weekly or bi-weekly basis from the Applicant's headquarters in San Diego. Local highways provide access to the site from cities throughout the region. It is 72 miles (less than a 1.5-hour drive) between Palm Springs and Desert Center, and 49 miles (less than a 1-hour drive) from both Indio and Blythe to Desert Center. Therefore, few, if any, workers are expected to relocate to the area permanently for construction. The majority of these temporarily relocated workers likely would commute on a daily basis between home and the project study area. It is unlikely that they would relocate their families for the duration of construction. Based on the data provided in Section 3.15, in-migration of the construction workforce could be accommodated within the available hotel rooms and housing vacancies in the nearby cities of Blythe and Indio, which have approximately 35 lodging facilities, offering an average of 55 rooms per facility. Because construction workers would be expected to be from the neighboring communities or to be accommodated in the available hotel and housing vacancies, minimal increase in utilities would be expected. Please see Section 4.18, Transportation and Public Access, for a discussion regarding construction traffic.

Changes in Revenue. Employment of construction personnel would be beneficial to local businesses and the regional economy through increased expenditure of wages for goods and services. Construction personnel would be drawn whenever possible from local populations in Riverside

and San Bernardino Counties, creating new temporary employment in these counties. A limited number of construction personnel would require temporary housing, likely in local hotels or rentals, and would purchase food, beverages, and other commodities, which would provide economic benefit to the local economy.

Quality of Life. The influx of the construction workforce would alter the isolated, quiet, and sparsely populated character of the communities surrounding the solar facility site during the construction period, which would be a temporary effect to the quality of life to residents of Desert Center, Lake Tamarisk Park, and Eagle Mountain. Scoping comments noted that the influx of people would potentially result in law enforcement problems and an increase in the use of existing infrastructure. As discussed above, the majority of construction workers for the project would be expected to commute daily to the site from neighboring communities. Because most workers would travel to the site from their homes, local residents may have little daily interaction with the workers, and the workers are unlikely to result in law enforcement problems or result in an increase in the use of existing infrastructure. It is possible that some construction workers could choose to commute from their homes on a weekly basis and stay within the local area at local hotels/motels, rent homes, or look for other types of accommodations. In this case, after the workday is over, these individuals would be more likely to interact with existing residents at local businesses or community facilities; however, they would still be expected to abide by Riverside County laws and would not be expected to result in an increase in law enforcement problems. Given the limited number of construction workers expected to stay in the local area during the work week, the presence of these individuals would not be expected to result in substantial or long-term adverse effects to the local area's social composition and character.

Indirect Effects

Changes to Local Employment or Labor Force. The proposed solar facility would not be expected to result in changes to local employment or labor force needs. A fire prevention plan would be in place during construction and would ensure adequate access to the project site in case of emergencies. It would protect against the possibility of fires generated by construction and operation of the DHSP, which would minimize the need for additional fire protection to the site. On-site security, including fencing, lighting, motion detectors, and cameras in key locations would minimize increased demand on law enforcement. During operations security lights would use motion sensor technology that would be triggered by movement at a human's height during maintenance or emergency activities. Sensors on the security fencing would alert security personnel of possible intruders. The Applicant would also require all new employees to complete health and safety training and follow standard construction safety measures during construction of Alternative 4, which would minimize the incidence of increased demand for hospital or emergency services. Given that the construction workforce for Alternative 4 would most likely already be employed in the regional construction industry in Riverside and San Bernardino Counties and would be subject to similar safety risks and protection measures as a function of this employment, no increase in the demand on hospital or emergency services within the county are anticipated.

Changes in Revenue. No business uses occur in the immediate vicinity of Alternative 4, and the project would not require the removal or relocation of any businesses. Effects on local businesses would potentially result from degradation of views, views of construction equipment and activity, vehicular or pedestrian access restrictions and increased traffic and associated air and

noise emissions, land use, air quality, and noise effects, or health and safety concerns (such as electromagnetic frequencies [EMF]). These issues are analyzed in this document in Sections 4.19 (Visual Resources), 4.11 (Lands and Realty), 4.12 (Noise), 4.18 (Transportation and Public Access), and 4.13 (Public Health and Safety). As short-term construction-related effects, these effects would not be substantial or have been mitigated such that they would not be substantial, any associated loss of local business revenue impacts would be minimal. In addition, these short-term effects would not displace existing businesses and would result in minimal revenue impacts. Therefore, no additional mitigation measures are required outside of those presented in Sections 4.19 (Visual Resources), 4.11 (Lands and Realty), 4.12 (Noise), 4.18 (Transportation and Public Access), and 4.13 (Public Health and Safety) to mitigate potential effects that would result in a substantial change to local business revenues.

Operation and Maintenance

Direct Effects

Changes to Local Employment or Labor Force. Operation and maintenance of Alternative 4 would require a workforce of up to 8 full-time staff year-round. This workforce would constitute < 0.01 percent of the total combined utilities workforce of the Riverside and San Bernardino County area (275,000 persons) (CAEDD 2011). With less than two-hours of driving between Desert Center and Palm Springs, Indio, and Blythe, it is anticipated that few workers would relocate to the area permanently. Please see Section 4.18, Transportation and Public Access, for a discussion of operational traffic.

Changes in Revenue. Employment of operation and maintenance personnel would be beneficial to local businesses and the regional economy through increased expenditure of wages for goods and services. Personnel would be drawn from local populations in Riverside and San Bernardino Counties, creating new employment in these counties. A limited number of personnel would require housing and would purchase food, beverages, and other commodities, which would provide economic benefit to the local economy in terms of increased revenues.

Indirect Effects

Changes in Property Value. There is concern that solar facilities might affect property values in nearby communities. During the public scoping process for the proposed DHSP, the public expressed interest and concern regarding the potential effects of the project on property values. Other agencies, such as the California Public Utilities Commission (CPUC) and California Energy Commission (CEC) have noted a high level of public concern associated with the siting of power plant projects, transmission lines, and other locally undesirable land uses (LULU) and potential effects on property values. Property values might decline in some locations as a result of the deterioration in aesthetic quality, increases in noise, real or perceived health effects, congestion, or social disruption. In other locations, property values might increase because of access to employment opportunities associated with solar development.

Numerous studies of LULUs, such as wind and nuclear energy generation and transmission line projects, conclude that the potential for environmental concerns associated with large-scale energy projects to have an effect on property value is usually smaller than anticipated and essentially impossible to quantify due to the individuality of properties and their respective neighborhoods, as well as differences in the personal preferences of individual buyers and the

weight of other factors that contribute to a person's decision to purchase a property (Hoen et al. 2009, Metz et al. 1997, Office of Energy Efficiency and Renewable Energy and Bureau of Land Management 2010, Sterzinger et al. 2003). Studies indicate that other property-specific factors such as neighborhood features, square footage, size of lot, and irrigation potential are substantially more likely than the presence of energy infrastructure to be major determinants of the sales price of property (McCann 1999). Across the board, studies have generally concluded that over time, potential adverse effects to property value tend to diminish to a point of being negligible within five years; the studies determine that this decreasing effect is most likely due to increased screening of facilities over time, as vegetation increases in size, as well as diminished public sensitivity to the facility proximity, particularly resulting from the absence of adverse publicity.

As demonstrated by the studies discussed above, factors that have the potential to affect property value are numerous and varied; as a result, it is not possible to identify exactly how the project would potentially affect private property values. However, because the conclusions of the Kinnard-Dickey (1995) paper and the Hoen, et al. (2009) paper are applicable to this analysis, it is possible to say that property-specific factors such as neighborhood features, square footage, size of lot, and water availability are more likely to be major determinants in property values than the presence of a solar generating facility such as the DHSP. It is not unreasonable to assume that some aspect of project construction and/or operation and maintenance could potentially affect private property values. However, as discussed above, the effects of industrial facilities on property value are generally smaller in comparison to other relevant factors and generally diminish within five years to be negligible.

Decommissioning

Socioeconomic effects that would result from decommissioning Alternative 4 are similar to those described for construction. Decommissioning Alternative 4 would likely require a similar number of workers during a similar timeframe to properly shut down and dismantle the solar field. Decommissioning and reclamation would be subject to a site-specific review when the facility reaches the end of its useful life.

Mitigation Measures

No mitigation measures are identified or required to reduce the effects below the level of significance.

Residual Impacts and Unavoidable Adverse Effects

All adverse effects on socioeconomics resulting from construction, operation and maintenance, or decommissioning of Alternative 4 would be avoided or substantially reduced.

4.15.7 Alternative 5 – Solar Project Excluding WHMA

Construction

Though Alternative 5 would be smaller in size than Alternative 4, this reduction in scale would not be substantial enough to reduce social and economic effects of construction. The effects of construction would be the same as those identified under Alternative 4.

Operation and Maintenance

The social and economic effects of operating and maintaining Alternative 5 would be the same as those identified under Alternative 4.

Decommissioning

The social and economic effects of decommissioning Alternative 5 would be the same as those identified under Alternative 4.

Mitigation Measures

No mitigation measures are identified or required to reduce the effects below the level of significance.

Residual Impacts and Unavoidable Adverse Effects

All adverse effects on socioeconomics resulting from construction, operation and maintenance, or decommissioning of Alternative 5 would be avoided or substantially reduced.

4.15.8 Alternative 6 – Reduced Footprint Solar Project

Construction

Though Alternative 6 would be smaller in size than Alternative 4, this reduction in scale would not be substantial enough to reduce social and economic effects of construction. The effects of construction would be the same as those identified under Alternative 4.

Operation and Maintenance

The social and economic effects of operating and maintaining Alternative 6 would be the same as those identified under Alternative 4.

Decommissioning

The social and economic effects of decommissioning Alternative 6 would be the same as those identified under Alternative 4.

Mitigation Measures

No mitigation measures are identified or required to reduce the effects below the level of significance.

Residual Impacts and Unavoidable Adverse Effects

All adverse effects on socioeconomics resulting from construction, operation and maintenance, or decommissioning of Alternative 6 would be avoided or substantially reduced.

4.15.9 Alternative 7 – High-Profile Reduced Footprint Solar Project

Construction

Though Alternative 7 would be smaller in size than Alternative 4, this reduction in scale would not be substantial enough to reduce social and economic effects of construction. The effects of construction would be the same as those identified under Alternative 4.

Operation and Maintenance

The social and economic effects of operating and maintaining Alternative 7 would be the same as those identified under Alternative 4.

Decommissioning

The social and economic effects of decommissioning Alternative 7 would be the same as those identified under Alternative 4.

Mitigation Measures

No mitigation measures are identified or required to reduce the effects below the level of significance.

Residual Impacts and Unavoidable Adverse Effects

All adverse effects on socioeconomics resulting from construction, operation and maintenance, or decommissioning of Alternative 7 would be avoided or substantially reduced.

4.15.10 Alternative A – No Gen-Tie

Under Alternative A, no gen-tie line would be constructed or operated as part of the Proposed Action. Therefore, no social or economic effects related to construction, operations and maintenance, or decommissioning of the gen-tie line would occur.

Mitigation Measures

No mitigation measures for social and economic effects are required for Alternative A.

Residual Impacts and Unavoidable Adverse Effects

No social or economic effects would result from the implementation of Alternative A.

4.15.11 Alternative B – Proposed Gen-Tie (Shared Towers)

Construction

Changes to Local Employment or Labor Force. Construction of gen-tie line Alternative B would employ fewer workers from the regional economy than the proposed solar generating facility and alternatives. The workforce for Alternative B is expected to average 30 employees over the 12-month gen-tie line construction period, with a peak of 65 employees. As with the solar field alternatives, this additional labor force would constitute a very small fraction of the total combined construction workforce of Riverside and San Bernardino Counties, and few, if any, workers are expected to relocate to the area permanently for construction.

Changes in Revenue. As with the solar field alternatives, employment of construction personnel would be beneficial to local businesses and the regional economy. Changes in revenue from Alternative B would be similar to those described in Alternative 4, but proportionally smaller given the smaller workforce required for Alternative B.

Quality of Life. Effects of Alternative B on quality of life would be similar to those described under Alternative 4, but proportionally smaller given the smaller workforce required for Alternative B.

Indirect Effects

Changes to Local Employment or Labor Force. Alternative B would not be expected to result in changes to local employment or labor force needs. The fire prevention plan that would be in place during construction of solar field alternatives would also apply to construction of Alternative B, and would minimize the demand that this construction would place on the California Department of Forestry and Fire Protection. All new employees working on Alternative B would be required to complete health and safety training and follow standard construction safety measures during construction, which would minimize the incidence of increased demand for hospital or emergency services. Given that the small construction workforce for Alternative B would most likely already be employed in the regional construction industry in Riverside and San Bernardino Counties and would be subject to similar safety risks and protection measures as a function of this employment, no increase in the demand on hospital or emergency services within Riverside County are anticipated.

Changes in Revenue. No business uses occur in the immediate vicinity of Alternative B, and the alternative would not require the removal or relocation of any businesses. Effects on local businesses would potentially result from degradation of views, views of construction equipment and activity, vehicular or pedestrian access restrictions, land use, air quality, and noise effects, or health and safety concerns (such as electromagnetic frequencies [EMF]). These issues are analyzed in this document in Sections 4.19 (Visual Resources), 4.11 (Lands and Realty), 4.12 (Noise), 4.18 (Transportation and Public Access), and 4.13 (Public Health and Safety). Effects from these issues would be the same as those described under Alternative 4, but proportionally smaller. As stated in Alternative 4, no additional mitigation measures are required outside of those presented in 4.19 (Visual Resources), 4.11 (Lands and Realty), 4.12 (Noise), 4.18 (Transportation and Public Access), and 4.13 (Public Health and Safety) to mitigate potential effects that would result in a substantial change to local business revenues.

Operation and Maintenance

There would be no new operations workforce associated with Alternative B beyond those associated with the solar field alternatives, and there would be no additional effects on population, housing, employment, income, or environmental justice populations associated with the operation of Alternative B. Removal of larger vegetation that could inhibit access to Alternative B would also reduce the likelihood of fire, which would minimize the demand potentially placed on the California Department of Forestry and Fire Protection.

Decommissioning

Effects resulting from decommissioning Alternative B are similar to those described under the construction phase.

Mitigation Measures

No mitigation measures are identified or required to reduce the effects below the level of significance.

Residual Impacts and Unavoidable Adverse Effects

All adverse effects on socioeconomics resulting from construction, operation and maintenance, or decommissioning of Alternative B would be avoided or substantially reduced.

4.15.12 Alternative C – Separate Transmission Towers within Same ROW

Construction

The infrastructure required for Alternative C is the same as that for Alternative B; the two alternatives would share the same ROW and follow the same path. Therefore, social and economic effects of construction of Alternative C would be identical to those described for Alternative B.

Operation and Maintenance

Social and economic effects of operating and maintaining Alternative C would be identical to those described for Alternative B.

Decommissioning

Social and economic effects of decommissioning Alternative C would be identical to those described for Alternative B.

Mitigation Measures

No mitigation measures are identified or required to reduce the effects below the level of significance.

Residual Impacts and Unavoidable Adverse Effects

All adverse effects on socioeconomics resulting from construction, operation and maintenance, or decommissioning of Alternative C would be avoided or substantially reduced.

4.15.13 Alternative D – Cross-Valley Alignment

Construction

Alternative D would require nearly identical workforce, construction, and operation activities as Alternative B. Therefore, the social and economic effects of construction of Alternative D are similar to those described under Alternative B. However, Alternative D would occur on a higher proportion of previously disturbed, private land, parallel to an existing SCE transmission line reducing its effects on local quality of life.

Operation and Maintenance

The effects resulting from operating and maintaining Alternative D are similar to those discussed under Alternative B.

Decommissioning

The effects resulting from decommissioning Alternative D are similar to those discussed under Alternative B.

Mitigation Measures

No mitigation measures are identified or required to reduce the effects below the level of significance.

Residual Impacts and Unavoidable Adverse Effects

All adverse effects on socioeconomics resulting from construction, operation and maintenance, or decommissioning of Alternative D would be avoided or substantially reduced.

4.15.14 Alternative E – New Cross-Valley Alignment

Construction

Alternative E would require nearly identical workforce, construction, and operation activities as Alternative B. Therefore, the social and economic effects of construction of Alternative E are similar to those described under Alternative B.

Operation and Maintenance

The effects resulting from operating and maintaining Alternative E are similar to those discussed under Alternative B.

Decommissioning

The effects resulting from decommissioning Alternative E are similar to those discussed under Alternative B.

Mitigation Measures

No mitigation measures are identified or required to reduce the effects below the level of significance.

Residual Impacts and Unavoidable Adverse Effects

All adverse effects on socioeconomics resulting from construction, operation and maintenance, or decommissioning of Alternative E would be avoided or substantially reduced.

4.15.15 Cumulative Effects

The proposed project and alternatives would not cause existing housing or persons to be displaced or necessitate the construction of replacement housing elsewhere. In addition, there would be no impact from construction workers requiring housing that exceeds the supply of local

housing or temporary housing facilities and minimal potential changes in the demand for labor or in local employment. As growth has been accounted for in various local and regional plans and projections and no changes to that growth would be likely to occur as a result of the proposed project and alternatives, displacement of and demand for housing and changes in the local labor market would not be considered as cumulative effects and are not discussed further. A cumulative effect would result if the interaction among the effects of the Proposed Action and other past, present, and reasonably foreseeable actions combined.

Geographic Scope

The geographic scope for the analysis of effects on socioeconomics consists of Riverside County and the cities contained therein. This geographic extent is appropriate because socioeconomic factors such as public services and utilities are provided by local jurisdictions or districts, and the regional labor force is expected to come primarily from within Riverside County and neighboring San Bernardino County. Table 4.1-1 and 4.1-2 provide lists of projects within the geographic extent for the socioeconomics cumulative scenario. Table 4.15-1 provides a list of the existing and foreseeable projects that could combine with the DHSP to result in a cumulative effect.

Table 4.15-1. Cumulative Projects within the Geographic Scope of Cumulative Analysis

Resource Area / BLM Program Area	Geographic Area of Consideration	Elements to Consider	BLM Authorized and Other Known County Projects/Actions/Activities
Social and Economic Setting	Riverside County and the cities therein	Impacts to the labor force, impacts on local businesses and residents	All projects listed in Table 4.1-1 and 4.1-2 for regional impacts. Regarding labor force the follow projects were considered: • Desert Sunlight Solar Farm • Silverado Power Solar Project • Palen Solar Power Project • Blythe Solar Power Project • NextEra McCoy • McCoy Soleil • Genesis Solar Energy Project • Rice Solar Energy Project • Blythe Airport Solar I Project • Desert Quartzite • Blythe Mesa Solar I • Rio Mesa Solar Electric

Cumulative Effects Analysis

Past development and population growth within Riverside County have impacted employment, public services, utilities, and housing demands. Population increases have increased development in Riverside County (mainly in incorporated areas) expanded the demand for housing, and increased the available workforce. Additional development both increases pressure on existing public services and utility systems and provides additional infrastructure to increase capacity and change employment opportunities. Section 3.15, Socioeconomics, describes existing socioeconomic, public services, and utilities conditions within the affected counties and cities.

Tables 4.1-1 through 4.1-2 list past, present, and foreseeable projects in the I-10 corridor in eastern Riverside County. Over 30 projects are proposed in the project area, nearly half of which have been approved or are under construction, and of which about 19 are renewable energy projects. The Desert Sunlight Solar Farm Project (DSSF) is currently under construction immedi-

ately north of the proposed DHSP. At least twelve of the proposed projects would permanently disturb over 1,000 acres of land each. The present and foreseeable projects in the project area would significantly increase developed human use of land. These projects include industrial, commercial, and residential developments as well as energy and infrastructure projects.

Construction of the DHSP would draw on the same labor force as other projects listed in Table 4.1-2. Effects would be cumulatively considerable if they would have the potential to combine with similar effects of other past, present, or reasonably foreseeable projects. The largest overlap would be with the DSSF adjacent to the DHSP site. Construction of these two projects would likely occur at the same time, and other proposed projects, including the Genesis Solar Power Project, could also have overlapping construction periods. Although the DHSP (Alternatives 4 through 7 and Alternatives C through E) alone would not be likely to generate population in-migration because of the large available labor pool in Riverside County and neighboring San Bernardino County, the demand for construction employment generated by the proposed project in combination with the other proposed solar and other renewable development in the region could increase the demand for skilled labor beyond the capacity of the region to accommodate it. Under such circumstance, the unmet labor demand could result in in-migration that could change the character of the regional labor force and add new residents to the region.

An extensive cumulative analysis for the region has been recently conducted for the Blythe Solar Power Project (BSPP). This analysis specifically determined the average and peak construction labor needs and supply conditions under the extremely improbable circumstance that peak construction of 13 planned BLM solar projects (including the Blythe, Desert Sunlight, and Desert Harvest projects) occur at the same time (BSPP 2010). The cumulative effects scenario for the Blythe project is predominately the same as that determined for the proposed project and consequently, the analysis and findings of the BSPP are applicable for evaluating the cumulative effects for the project.

The total labor demand for near-term construction (2012 to 2017) of all 13 major solar projects is estimated to be roughly equivalent to an average of 5,000 full-time construction workers per year[1] (BSPP 2010). This level of construction worker labor demand would represent the minimum employment impact on the cumulative impact study area since it assumes that all the BLM solar project construction work would be evenly performed over the five-year period. The analysis also determined that a "worst case" maximum of 11,360 construction workers could be required in the region.

The actual cumulative construction labor force demand within the study region will likely be higher than the 5,000 workers, but likely considerably lower than the 11,360 maximum workers. The average construction period for BLM solar projects is estimated to be 3.6 years and some seasonality may be expected as developers favor construction during the region's cooler winter months. Therefore, conservatively assuming that all the projects would be completed within the

[1] Construction workforce was estimated from descriptions solar projects where available. The Blythe Solar Power Project (1,000 MW) would require an average of 604 workers with a peak of 1,004 workers; the Genesis Solar Energy Project (250 MW) would require an average of 646 workers with a peak of 1,085 workers; the Palen Solar Power Project (500 MW) would require an average of 566 workers with a peak of 1,145; the Desert Sunlight Solar Farm Project (550 MW) would require an average of 390 to 440 workers with a peak of 540; and Rice Solar Project would require an average of 280 workers with a peak of 438 workers.

five-year cumulative scenario period, the regional labor need for a realistic "worst case condition" would be for four projects to have peak labor needs during the same year.[2]

Given an average construction period of 3.6 years, it would also be expected up to 11 projects would be ongoing during an expected peak labor demand period of 2012 to 2014. Therefore, the peak construction labor demand for the cumulative analysis is estimated to be equivalent to the total construction labor demand for seven solar projects under average construction conditions and four solar projects during peak construction. Altogether, such a rate of solar construction would be expected to require a total of 7,180 construction workers for the various BLM solar projects along the I-10 corridor during the years of major solar project development (BSPP 2010).[3]

In addition, there could also be demand for construction workers from the planned non-BLM solar project proposed for the Blythe Airport (requiring an estimated 150 construction workers annually) and other solar development on private land in the Desert Center and Blythe regions. The future construction needs of the several other non-solar projects on BLM land in the region are not known but, altogether, reasonably could be expected to have an annual construction labor need roughly comparable to another solar project (i.e., 530 construction workers) (BSPP 2010).

Therefore, 7,860 construction workers is very conservatively estimated to represent the maximum likely future cumulative labor force demand from the region's planned solar and non-solar development. This estimate assumes all the identified projects would be developed within the five-year cumulative analysis period.[4] The proposed project's maximum potential contribution to this cumulative effect is estimated at 4 percent during its peak construction period. The DHSP's average contribution to the cumulative effect is estimated at 1 percent during its non-peak construction (BSPP 2010).

The total work force of skilled construction workers currently living in eastern Riverside County is estimated to be 15,000. Future demand for 7,860 construction workers would be equivalent to employment for more than half of the current skilled labor force. Such demand for construction workers far exceeds the current unemployed construction labor force but 850 additional skilled construction workers are expected to be added to the eastern Riverside County labor force by 2016. The cumulative labor force demand would still represent more than half the region's currently forecasted future skilled construction labor force (BSPP 2010).

Eastern Riverside County's current unemployed labor force is estimated to be 25,000. The construction worker demand would represent a 31 percent decrease in the regional study area's unemployment level. Although many of the region's currently unemployed residents may lack transferable skills or the physical aptitude to acquire the necessary skills required by the cumulative labor demand, many residents could be adequately trained to be employable. Furthermore,

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[2] The peak construction requirement typically occurs during mid-construction, suggesting that 2012 to 2014 would be most likely to experience peak labor demands.

[3] This assumes a typical 470 MW solar projects requiring 527 workers under average construction conditions and 873 workers during their shorter periods of peak construction.

[4] In actuality, construction labor shortages (and related wage escalation) would also be expected to become a possible constraint reducing the pace of future development.

some of the construction work would be more entry-level positions which may be suitable for less skilled workers.

Some of the regional workforce currently employed in other sectors could also have the capabilities to qualify for solar construction work. In such cases, some job transferring may occur, especially since the construction jobs may be expected to be relatively well-paid and attractive for many local residents. The less skilled or desirable jobs vacated by individuals transferring to construction work could be filled by other less skilled unemployed residents. Finally, the cumulative labor force demand on eastern Riverside County also could be partly reduced as projects located in more central Riverside County (such as the DHSP) would be closer to cities and potential workers outside the regional study area. Consequently, these projects could meet some of their labor needs from residents from Desert Hot Springs, Morongo Valley, or Banning.

Nonetheless, there could be demand for specialized construction trades that exceed the available labor supply for that specialty within eastern Riverside County. In such a case, it is assumed that those job positions would be filled by workers relocating into the region from elsewhere. Other social and economic impacts analyses for solar projects have suggested that a 15 percent rate of in-migration would be a conservative and reasonable assumption. Such a proportion of in-migration applied to the projected maximum future cumulative labor force demand would suggest that up to 1,165 construction workers [could require temporary housing in the region (BSPP 2010). The majority of these temporarily relocated workers likely would commute on a weekly basis between home and the project study area. It is unlikely that they would relocate their families for the duration of construction.

If construction workers were willing to commute 1 hour daily to the site, the supply of potential hotel/motel rooms would be greater than 1,925 (capacity of Blythe and Indio alone). Given that some workers would be willing to share rooms, the number of potential workers who could be accommodated would be even greater. In addition to the available lodging in the local area, there are also potentially considerable under-utilized homes in the local area that may be suitable for rent by construction workers seeking local housing. As shown in Table 3.15-3, 960 homes are currently estimated to be vacant in Blythe and another 5,593 local housing units may be available within Indio, totaling 6,553 in the 1 hour commute window and 102,507 units in Riverside County as a whole. Given that some construction workers could be willing to share homes to reduce their lodging costs, there would be more than sufficient temporary housing for an expected 1,165 construction workers.

Some of the solar developers might also choose to develop onsite housing facilities for their construction work forces. For example, on-site worker accommodations are planned as part of the Rice Solar project by its developer.[5] The Eagle Mountain Pumped Storage project near Desert Center is located at a former mine site that has housing previously used by mine workers. On-site accommodations would reduce the load on local hotels, motels, and houses.

In summary, there is potential for short-term adverse cumulative social and economic effects in the region associated with the demand for skilled construction labor for the dozen solar projects

[5] Development of temporary worker housing facilities is more likely to be possible at projects (such as Rice) that are located on private property.

proposed for future development within eastern Riverside County. Analysis suggests that future construction labor demand would be greatest from 2012 to 2014, and may be sufficient to exceed the existing local work force within eastern Riverside County; hence, there may be increased demand for temporary local housing from construction workers seeking to commute weekly to the local area. However, given the estimated availability of lodging and possible rental housing, it is expected that there will be adequate and suitable housing to meet any future construction worker temporary housing demand. Therefore, no adverse social or economic effects would be expected.

Socioeconomic effects on local businesses and residents adjacent to the project area or along construction transportation routes would result from visual impacts, vehicular or pedestrian access delays or detours, land use impacts, or health and safety concerns. The extent that these impacts would affect the perceived quality of life in the areas adjacent to the DHSP (Alternatives 4 through 7 and Alternatives C through E) would be minimized by making the public aware of construction timing, duration, and location so that they may better plan for construction-related access issues. It is expected that the added daily traffic from construction vehicles would not have a noticeable effect on traffic volumes given the existing volumes of car and truck traffic on I-10, even with partially overlapping construction periods for several projects. The cumulative effects of the DHSP (Alternatives 4 through 7 and Alternatives C through E) in combination with reasonably foreseeable projects on each of these resource areas are analyzed in this chapter in Sections 4.19 (Visual Resources), 4.11 (Lands and Realty), 4.12 (Noise), 4.18 (Transportation and Public Access), and 4.13 (Public Health and Safety). Any associated contribution to a short-term loss of local business revenue would not be cumulatively significant, and any contribution of DHSP (Alternatives 4 through 7 and Alternatives C through E) to perceived social effects due to construction activity along with the listed cumulative projects would be minor and temporary for the duration of the project construction.

Construction and operation of DHSP (Alternatives 4 through 7 and Alternatives C through E) would not contribute to temporary or permanent displacements of businesses or residents in Riverside County that could occur as a result of the projects identified in Table 4.1-2. In addition, the DHPS would contribute to local expenditures on materials and supplies for construction, which, in combination with other past, ongoing, and future projects, would generate expenditures, income, and employment in the local economy, stimulating economic growth.

The incremental effects of construction and operation of the DHSP (Alternatives 4 through 7 and Alternatives C through E) would not have a substantial effect on cumulative socioeconomic and environmental justice resources.

The No Action and No Project Alternatives (Alternatives 1, 2, 3, and A) would not contribute to any cumulative effects. In addition, Alternative B would not contribute to cumulative socioeconomic and environmental justice effects, as the cumulative scenario assumes concurrent construction of the Desert Sunlight approved gen-tie and Alternative B conductor stringing using the same crew at the same time, with no additional work required for Alternative B beyond what is required for the Desert Sunlight gen-tie.

4.15.16 CEQA Considerations

CEQA Significance Criteria

Under CEQA, the proposed project would have a significant impact on Socioeconomics if it would:

SE-1 Displace substantial numbers of people or existing housing on a permanent basis, necessitating the construction of replacement housing outside the local region;

SE-2 Induce short-term or long-term population growth to an extent that could not be accommodated by local housing, local services, and infrastructure, including:

SE-2a Generating solid waste or wastewater that exceeds the capacity of existing facilities to accommodate;

SE-3b Requiring the construction of new public service facilities or require the expansion of existing facilities to accommodate an increased need for fire protection, police protection, schools, or other public services;

SE-3 Cause a substantial long-term reduction in revenue for local businesses, government agencies, or Indian tribes;

SE-4 Result in a substantial reduction in the employment and incomes of local residents;

SE-5 Substantially alter the lifestyles or quality of life of populations using or residing in proximity to the proposed project;

SE-6 Result in a barrier between local residents and the local services and facilities used by these residents;

SE-7 Conflict with applicable land use plans and policies associated with socioeconomics, public services, or utilities; or

SE-8 Disrupt existing utility systems.

For the Proposed Action, all of the CEQA significance criteria listed above were determined to be inapplicable or to result in no impact as explained below.

CEQA Significance Determination

Alternative 1. Under Alternative 1, the DHSP would not be approved by the BLM, and BLM would not amend the CDCA Plan. As a result, no solar energy project would be constructed on the project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan. Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no ground disturbance. As a result, no social or economic impacts would occur.

Alternative 2. Under Alternative 2, the proposed DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site available for future solar energy development. As a result, the Desert Harvest Solar Project would not be constructed on

the project site and BLM would manage the site consistent with the amended land use designation in the CDCA Land Use Plan. No social or economic impacts from the Desert Harvest Solar Project would occur.

Alternative 3. Under Alternative 3, the proposed DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site unavailable for future solar energy development. As a result, the Desert Harvest Solar Project would not be constructed on the project site and BLM would manage the site consistent with the amended land use designation in the CDCA Land Use Plan. No social or economic impacts from the Desert Harvest Solar Project would occur.

Alternative 4. As described above in Section 4.15.6, Alternative 4 would not displace substantial numbers of people or housing (SE-1) and would not require additional housing infrastructure (SE-2): the workforce would be small relative to regional supply, most workers would commute from off-site, current accommodations are adequate to support potential in-migration, and the bulk of the workforce would be present during construction activities only. Given this, project impacts would not generate unmanageable solid waste or wastewater (SE-3b). The influx of potential consumers would likely generate economic benefit for local community through increased purchase of goods and services, and would contribute to local employment (SE-4). The small number of temporary workers is not likely to substantially lower quality of life of local residents (SE-5) or remove residents from local services (SE-6).

The project's fire management plan, security lighting, and health and safety training would minimize need for expansion of public services (SE-3). Utility services would also operate uninterrupted during construction, operation and maintenance, and decommissioning of Alternative 4 and would not be impacted by its presence (SE-8). The project location on BLM multiple use class M land would not conflict with any land use plans associated with socioeconomics, public services, or utilities (SE-7).

As described in Section 4.15.15, though some minor cumulative impacts could occur during the period of construction, the effects of construction and operation of the DHSP would not have a cumulatively considerable impact on socioeconomic resources when combined with the past, existing, and future projects identified in Table 4.1-1 and Table 4.1-2.

Alternative 5. As described in Section 4.15.7 of this EIS, potential social and economic effects of Alternative 5 would be largely the same as under Alternative 4; as such, potential social and economic impacts that would occur during construction, operation and maintenance, and decommissioning would be the same as described above for Alternative 4, and would be less than significant with no mitigation required.

Alternative 6. As described in Section 4.15.8 of this EIS, potential social and economic effects of Alternative 6 would be largely the same as under Alternative 4; as such, potential social and economic impacts that would occur during construction, operation and maintenance, and decommissioning would be the same as described above for Alternative 4, and would be less than significant with no mitigation required.

Alternative 7. As described in Section 4.15.8 of this EIS, potential social and economic effects of Alternative 7 would be largely the same as under Alternative 4; as such, potential social and economic impacts that would occur during construction, operation and maintenance, and decom-

missioning would be the same as described above for Alternative 4, and would be less than significant with no mitigation required.

Alternative A. Under Alternative A, no gen-tie line would be constructed and no plan amendment would be issued. If this No Action Alternative were selected, the construction and impacts of the gen-tie line would not occur, and BLM would continue to manage the site under the existing land use designation in the CDCA Plan. Because there would be no amendment to the CDCA Plan and no gen-tie line approved for the site under this alternative, it is expected that proposed tower locations and pull sites would continue to remain in their existing conditions, with no new structures constructed or operated on and no ground disturbance. As a result, no social or economic impacts would occur.

Alternative B. As described in Section 4.15.11 of this EIS, potential social and economic effects of Alternative B would be of the same type as those described under Alternative 4. However, because of the smaller workforce and scope of construction operations, the social and economic impacts of Alternative B would be substantially less intense than those described under Alternative 4. As such, social and economic impacts of construction, operation and maintenance, and decommissioning would be less than significant with no mitigation required.

Alternative C. As described in Section 4.15.12 of this EIS, potential social and economic effects of Alternative C would be the same as under Alternative B; as such, potential social and economic impacts that would occur during construction, operation and maintenance, and decommissioning would be the same as described above for Alternative B, and would be less than significant with no mitigation required.

Alternative D. As described in Section 4.15.13 of this EIS, potential social and economic effects of Alternative D would be largely the same as under Alternative B; as such, potential social and economic impacts that would occur during construction, operation and maintenance, and decommissioning would be the same as described above for Alternative B, and would be less than significant with no mitigation required.

Alternative E. As described in Section 4.15.14 of this EIS, potential social and economic effects of Alternative E would be largely the same as under Alternative B; as such, potential social and economic impacts that would occur during construction, operation and maintenance, and decommissioning would be the same as described above for Alternative B, and would be less than significant with no mitigation required.

Growth-Inducing Effects

Section 15126.2(d) of the State CEQA Guidelines provides the following guidance on growth-inducing impacts: a project is identified as growth inducing if it "could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment."

Potential growth-inducing components of the proposed project addressed in this section relate to employment and potential local population growth, and increased power generation and potential regional population growth.

Employment and Population Growth

Construction Workforce. The proposed project would require an average construction workforce of 100 workers per day, with a peak number of workers estimated at 250 workers. Workers are expected to be hired primarily from Riverside County, San Bernardino County, and some from adjacent counties, with the majority of the workforce anticipated from Palm Springs, Desert Center, and Blythe.

The vacancy rate and the availability of temporary accommodation in the project study area indicate that the area has the capacity to temporarily house this workforce. Because the project study area has sufficient available hotel and housing vacancies, temporary direct and indirect population growth impacts would not result from worker relocation.

As shown in Section 3.15.2 (Existing Conditions, Employment and Income), the employment profile of the project study area, 2008, Riverside County has a construction labor force of 62,194 workers, and San Bernardino County has a construction labor force of 53,914. A maximum of 250 workers hired from within these counties would represent 0.5 percent of the total construction labor force of each county. While a single project utilizing 0.5 percent of the total construction labor force of the project study area would be considered a substantial demand, considering the high unemployment rate in the area, this would be a beneficial impact in the project study area. As a temporary component, the construction phase would not trigger additional population growth in the area.

Operational Workforce. Operation of the proposed project would require up to 8 full-time staff. Employees are expected to be drawn from the labor force within Riverside or San Bernardino County. While it is speculative to determine where the full-time staff would choose to live, if the entire staff of 8 were hired from outside the project study area, up to 8 households could potentially relocate to the area, representing a population increase of an estimated 23 individuals or a 0.001 percent increase in Riverside County's population. Considering the less-than-2-hour drive between Desert Center and Palm Springs, Indio, and Blythe, it is anticipated that few workers would relocate to the area permanently.

Increased Power Generation

While the proposed project would contribute to energy supply, which indirectly supports population growth, development of the proposed project is a response to the State's need for renewable energy to meet its Renewable Portfolio Standard. Unlike a gas-fired power plant, the proposed project is not being developed as a source of base-load power that would typically be developed to support a growth in demand for electricity. The power generated would be added to the State's electricity grid, with the intent that it would displace fossil fuel fired power plants and their associated greenhouse gas emissions.

Riverside County planning documents permit and anticipate a certain level of growth, along with attendant growth in energy demand. The County General Plan Land Use Element addresses growth states that Riverside County has a vision future growth should be directed to areas that are well served by public facilities and services and preserve significant environmental features such as drainage ways, lands subject to extreme natural hazards, or lands that offer scenic beauty (Riverside County 2003).

The proposed project would supply energy to accommodate and support existing demand and projected growth, but it would not foster any new growth, because (1) the additional energy would be used to ease the burdens of meeting existing statewide energy demands within and beyond the area of the project; (2) the energy would be used to support already-projected growth; or (3) the factors affecting growth are so diverse that any potential connection between additional energy production and growth would necessarily be too speculative and tenuous to merit extensive analysis.

4.16 ENVIRONMENTAL JUSTICE

4.16.1 Methodology for Analysis

In the analysis, the percentages of minority and low-income populations were examined for the area in the vicinity of the proposed Desert Harvest Solar Project (DHSP). For purposes of consistency and in compliance with the BLM guidelines, U.S. Census data are used to determine minority and low-income population percentages in the affected area. The unit of analysis of potential impact on minority populations and low-income populations is the census tract or block group. After an initial screening-level analysis of the project area to determine low-income and minority percentage areas, a jurisdictional screening-level analysis is conducted. If the jurisdiction has a population of 50 percent or greater for either the low-income or minority categories, it is identified for more detailed analysis. Similarly, if the jurisdiction has a population meaningfully greater (50 percent or greater) than the minority or low-income population percentage in the general population of the jurisdiction, it is identified for more detailed analysis. Identification of an area which would be disproportionately affected by the project does not by itself constitute an environmental justice impact. The conclusions of the analyses of effects for all resources and issues throughout Chapter 4 are then reviewed to identify impacts, if any, to aspects of the environmental justice population, such as air quality, noise, visual impacts, socioeconomic impacts, public health and safety, or others.

An area within one-half mile (0.5 miles) of the proposed project site is the project study area in this section. The project study area may change depending on the types of effects analyzed; however, using an affected area of 0.5 miles, rather than 1 or 2 miles identifies localized effects of the project. By looking at the localized effects (in this case, within 0.5 miles) rather than the effects that would impact everyone residing in a region equally (such as an area of greater than one mile) identifies disproportionate project-specific effects to minority and low-income populations. Effects that impact areas outside of 0.5 miles, such as visual effects and certain air and water quality effects, would impact the greater region. Looking at such a wide area would not identify any disproportionate effects to minority or low-income populations. By setting the project study area at 0.5 miles for environmental justice, the analysis will focus on the project effects specific to the populations within the vicinity of the project route rather than the region as a whole.

The proposed project or its alternatives would result in an environmental justice effect if *both* of the following are true: (1) there is an unavoidable adverse impact to humans, and (2) the affected area contains a minority or low-income population (as defined in Section 3.16.2). Unavoidable adverse impacts are identified where mitigation measures, which are presented in each section, are not adequate to ensure that effects associated with construction and operation of the proposed project or its alternatives are sufficiently minimized or avoided.

4.16.2 Applicant Measures

No Applicant Measures have been proposed to reduce environmental justice effects.

4.16.3 Alternative 1 – No Action (No Plan Amendment)

Under Alternative 1, the proposed DHSP would not be approved by the BLM, and BLM would not amend the CDCA Plan. As a result, no solar energy project would be constructed on the

project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no ground disturbance. As a result, effects would not occur.

4.16.4 Alternative 2 – No Project Alternative (with Plan Amendment to Find the Site Suitable for Solar Energy Development)

Under Alternative 2, the proposed DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site available for future solar energy development. As a result, the DHSP would not be constructed on the project site and BLM would manage the site consistent with the amended land use designation in the CDCA Land Use Plan. No effects from the DHSP would occur.

4.16.5 Alternative 3 – No Project Alternative (with Plan Amendment to Find the Site Unsuitable for Solar Energy Development)

Under Alternative 3, the DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site unavailable for future solar energy development. As a result, the DHSP would not be constructed on the project site and BLM would manage the site consistent with the amended land use designation in the CDCA Land Use Plan. No impacts from the DHSP would occur.

4.16.6 Alternative 4 – Proposed Solar Project

Construction

Direct Effects

As described in Section 3.16, Environmental Justice, the 2000 U.S. Census found the population in the vicinity of the proposed project (located in Census Tract 458 Block Groups 3, 5, and 6) to have an overall minority population of 71.15 percent. The 2010 U.S. Census found the population (now consolidated into a single block group making up the entirety of Census Tract 469) to have a total minority population of 55.41 percent. In both cases, this is above the 50 percent threshold identified by EPA (1998) for identifying a population of concern in an environmental justice analysis. Based on the 2000 U.S. Census data for poverty of the population in the vicinity of the proposed project is well below the 50 percent threshold for poverty with Census Tract 458 Block Groups 3, 5, and 6 having 4.3 percent of the population below the poverty level.

As Census Tract 469 (previously Census Tract 458 Block Groups 3, 5, and 6) is a large, rural census tract covering hundreds of square miles of land, evaluating the environmental justice effects of Alternative 4 examined populations in the immediate vicinity of the DHSP. Alternative 4 would be located within 0.5 miles of 10 Census Blocks, of which only one has a resident population (Block 1412). Additionally, the construction access route off of Interstate 10 (I-10) would be located within 0.5 miles of another 11 populated Census Blocks with a total population of 170 for all 12 Census Blocks. Of these 170 residents, 37 are identified as minority (22 percent) (U.S. Census Bureau 2010). As the minority and low-income population in the vicinity of

the proposed project and construction truck route would be less than 50 percent, it is unlikely that Alternative 4 would disproportionately adversely affect these populations.

Indirect Effects

As construction effects would be short-term and temporary in duration, they would result in no indirect environmental justice effects.

Operation and Maintenance

Direct Effects

As described above for construction effects, the proposed project would be located within 0.5 miles of one populated Census Block and the commute route for operational personnel would pass within 0.5 miles of another 11 populated Census Blocks. As the population in these Census Blocks would be approximately 22 percent minority and as the poverty rate in the area is 4.3 percent, it is unlikely that operation and maintenance of Alternative 4 would disproportionately adversely affect these populations.

Indirect Effects

As the population in the vicinity of Alternative 4 would not be considered low-income or minority, it is unlikely that indirect effects associated with operation and maintenance of Alternative 4 disproportionately adversely affect these populations.

Decommissioning

Direct Effects

Decommissioning activities associated with Alternative 4 would require similar equipment and activities as described for construction. Assuming that the population demographics of the area remain the same for the life of the project, the population in the vicinity of Alternative 4 would not be considered low-income or minority and it is unlikely that decommissioning would disproportionately adversely affect these populations.

Indirect Effects

As described for construction, decommissioning effects would be short-term and temporary in duration and would result in no indirect environmental justice effects.

Mitigation Measures

No mitigation measures are required to reduce effects related to special designations.

Residual Impacts and Unavoidable Adverse Effects

There would be no unavoidable significant environmental justice effects as a result of Alternative 4.

4.16.7 Alternative 5 – Solar Project Excluding WHMA

Construction

Direct Effects

While Alternative 5 would exclude the portion of the site within the Palen-Ford WHMA, the boundaries of the project would otherwise be the same as described for Alternative 4 and construction access routes would remain the same. The populations affected by Alternative 5 would be the same as described for Alternative 4. Consequently, the effects resulting from construction of Alternative 5 would be the same as those described for Alternative 4.

Indirect Effects

As construction effects would be short-term and temporary in duration, they would result in no indirect environmental justice effects.

Operation and Maintenance

Direct Effects

As described above for construction of Alternative 5, operation and maintenance of Alternative 5 would result in the same effects as described for Alternative 4.

Indirect Effects

Indirect effects resulting from operation and maintenance of Alternative 5 would also be the same as described for Alternative 4.

Decommissioning

Direct Effects

Direct effects associated with decommissioning activities for Alternative 5 would be the same as those described for Alternative 4.

Indirect Effects

Indirect effects associated with decommissioning activities for Alternative 5 would be the same as those described for Alternative 4.

Mitigation Measures

No mitigation measures are required to reduce effects related to special designations.

Residual Impacts and Unavoidable Adverse Effects

There would be no unavoidable significant environmental justice effects as a result of Alternative 5.

4.16.8 Alternative 6 – Reduced Footprint Solar Project

Construction

Direct Effects

While Alternative 6 would exclude the separate southwestern parcel of the site, the boundaries of the project would otherwise be the same as described for Alternative 4. The populations affected by Alternative 6 would be the same as described for Alternative 4. Consequently, the effects resulting from construction of Alternative 6 would be the same as those described for Alternative 4.

Indirect Effects

Indirect effects resulting from construction of Alternative 6 would also be the same as described for Alternative 4.

Operation and Maintenance

Direct Effects

As described above for construction of Alternative 6, operation and maintenance of Alternative 6 would result in the same effects as described for Alternative 4.

Indirect Effects

Indirect effects resulting from operation and maintenance of Alternative 6 would also be the same as described for Alternative 4.

Decommissioning

Direct Effects

Direct effects associated with decommissioning activities for Alternative 6 would be the same as those described for Alternative 4.

Indirect Effects

Indirect effects associated with decommissioning activities for Alternative 6 would be the same as those described for Alternative 4.

Mitigation Measures

No mitigation measures are required to reduce effects related to special designations.

Residual Impacts and Unavoidable Adverse Effects

There would be no unavoidable significant environmental justice effects as a result of Alternative 6.

4.16.9 Alternative 7 – High-Profile Reduced Footprint Solar Project

Construction

Direct Effects

While Alternative 7 would exclude the separate southwestern parcel of the site, the boundaries of the project would otherwise be the same as described for Alternative 4. The populations affected by Alternative 7 would be the same as described for Alternative 4. Consequently, the effects resulting from construction of Alternative 7 would be the same as those described for Alternative 4.

Indirect Effects

Indirect effects resulting from construction of Alternative 7 would also be the same as described for Alternative 4.

Operation and Maintenance

Direct Effects

As described above for construction of Alternative 7, operation and maintenance of Alternative 7 would result in the same effects as described for Alternative 4.

Indirect Effects

Indirect effects resulting from operation and maintenance of Alternative 7 would also be the same as described for Alternative 4.

Decommissioning

Direct Effects

Direct effects associated with decommissioning activities for Alternative 7 would be the same as those described for Alternative 4.

Indirect Effects

Indirect effects associated with decommissioning activities for Alternative 7 would be the same as those described for Alternative 4.

Mitigation Measures

No mitigation measures are required to reduce effects related to special designations.

Residual Impacts and Unavoidable Adverse Effects

There would be no unavoidable significant environmental justice effects as a result of Alternative 7.

4.16.10 Alternative A – No Gen-Tie

Under Alternative A, the proposed gen-tie would not be approved by the BLM, and no plan amendment would be issued. If this No Action Alternative were selected, the construction and

effects of the gen-tie line would not occur, and BLM would continue to manage the gen-tie route consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because there would be no amendment to the CDCA Plan and no gen-tie approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no ground disturbance. As a result, effects would not occur.

4.16.11 Alternative B – Proposed Gen-Tie (Shared Towers)

Construction

Direct Effects

Census Tract 469 covers hundreds of square miles of land, so the analysis of environmental justice effects of Alternative B examined populations in the immediate vicinity of the gen-tie route. Alternative B and the access route for construction traffic would be located within 0.5 miles of 11 populated Census Blocks with a total population of 164. Of these 164 residents, 33 are identified as minority (20 percent) (U.S. Census Bureau 2010). As described for Alternative 4, the population in the vicinity of the proposed project site is well below the 50 percent threshold for poverty with Census Tract 458 Block Groups 3, 5, and 6 (the year 2000 designation for Census Tract 469) having only 4.3 percent of the population below the poverty level. As the minority and low-income population in the vicinity of the proposed project site and construction truck route would be less than 50 percent, it is unlikely that Alternative B would disproportionately adversely affect these populations.

Indirect Effects

As construction effects would be short-term and temporary in duration, they would result in no indirect environmental justice effects.

Operation and Maintenance

Direct Effects

As described above for construction effects, the Alternative B gen-tie route would be located within 0.5 miles of 11 populated Census Blocks. As the population in these Census Blocks would be approximately 20 percent minority and as the poverty rate in the area is 4.3 percent, it is unlikely that operation and maintenance of Alternative B would disproportionately adversely affect these populations.

Indirect Effects

As the population in the vicinity of the Alternative B gen-tie route would not be considered low-income or minority, it is unlikely that indirect effects associated with operation and maintenance of Alternative B disproportionately adversely affect these populations.

Decommissioning

Direct Effects

Decommissioning activities associated with Alternative B would require similar equipment and activities as described for construction. Assuming that the population demographics of the area remain the same for the life of the project, the population in the vicinity of Alternative B would not be considered low-income or minority and it is unlikely that decommissioning would disproportionately adversely affect these populations.

Indirect Effects

As described for construction, decommissioning effects would be short-term and temporary in duration and would result in no indirect environmental justice effects.

Mitigation Measures

No mitigation measures are required to reduce effects related to special designations.

Residual Impacts and Unavoidable Adverse Effects

There would be no unavoidable significant environmental justice effects as a result of Alternative B.

4.16.12 Alternative C – Separate Transmission Towers within Same ROW

Construction

Direct Effects

While Alternative C would require construction of a second set of transmission lines in the Desert Sunlight gen-tie corridor, the route of the transmission line would be the same as described for Alternative B and construction access routes would remain the same. The populations affected by Alternative C would be the same as described for Alternative B. Consequently, the effects resulting from construction of Alternative C would be the same as those described for Alternative B.

Indirect Effects

As construction effects would be short-term and temporary in duration, they would result in no indirect environmental justice effects.

Operation and Maintenance

Direct Effects

As described above for construction of Alternative C, operation and maintenance of Alternative C would result in the same effects as described for Alternative B.

Indirect Effects

Indirect effects resulting from operation and maintenance of Alternative C would also be the same as described for Alternative B.

Decommissioning

Direct Effects

Direct effects associated with decommissioning activities for Alternative C would be the same as those described for Alternative B.

Indirect Effects

Indirect effects associated with decommissioning activities for Alternative C would be the same as those described for Alternative B.

Mitigation Measures

No mitigation measures are required to reduce effects related to special designations.

Residual Impacts and Unavoidable Adverse Effects

There would be no unavoidable significant environmental justice effects as a result of Alternative C.

4.16.13 Alternative D – Cross-Valley Alignment

Construction

Direct Effects

Alternative D and the access route for construction traffic would be located within 0.5 miles of 13 populated Census Blocks with a total population of 179. Of these 179 residents, 37 are identified as minority (21 percent) (U.S. Census Bureau 2010). As also described above for Alternative 4, the population in the vicinity of the project site is well below the 50 percent threshold for poverty with Census Tract 458 Block Groups 3, 5, and 6 (the year 2000 designation for Census Tract 469) having only 4.3 percent of the population below the poverty level. As the minority and low-income population in the vicinity of Alternative D and construction truck route would be less than 50 percent, it is unlikely that Alternative D would disproportionately adversely affect these populations.

Indirect Effects

As construction effects would be short-term and temporary in duration, they would result in no indirect environmental justice effects.

Operation and Maintenance

Direct Effects

As described above for construction effects, the Alternative D gen-tie route would be located within 0.5 miles of 13 populated Census Blocks. As the population in these Census Blocks would be approximately 21 percent minority and as the poverty rate in the area is 4.3 percent, it is unlikely that operation and maintenance of Alternative D would disproportionately adversely affect these populations.

Indirect Effects

As the population in the vicinity of the Alternative D gen-tie route would not be considered low-income or minority, it is unlikely that indirect effects associated with operation and maintenance of Alternative D disproportionately adversely affect these populations.

Decommissioning

Direct Effects

Decommissioning activities associated with Alternative D would require similar equipment and activities as described for construction. Assuming that the population demographics of the area remain the same for the life of the project, the population in the vicinity of Alternative D would not be considered low-income or minority and it is unlikely that decommissioning would disproportionately adversely affect these populations.

Indirect Effects

As described for construction, decommissioning effects would be short-term and temporary in duration and would result in no indirect environmental justice effects.

Mitigation Measures

No mitigation measures are required to reduce effects related to special designations.

Residual Impacts and Unavoidable Adverse Effects

There would be no unavoidable significant environmental justice effects as a result of Alternative D.

4.16.14 Alternative E – New Cross-Valley Alignment

Construction

Direct Effects

Alternative E and the access route for construction traffic would be located within 0.5 miles of 14 populated Census Blocks with a total population of 194. Of these 194 residents, 42 are identified as minority (22 percent) (U.S. Census Bureau 2010). As also described above for Alternative 4, the population in the vicinity of the project site is well below the 50 percent threshold for poverty with Census Tract 458 Block Groups 3, 5, and 6 (the year 2000 designation for Census Tract 469) having only 4.3 percent of the population below the poverty level. As the minority and low-income population in the vicinity of Alternative E and construction truck route would be less than 50 percent, it is unlikely that Alternative E would disproportionately adversely affect these populations.

Indirect Effects

As construction effects would be short-term and temporary in duration, they would result in no indirect environmental justice effects.

Operation and Maintenance

Direct Effects

As described above for construction effects, the Alternative E gen-tie route would be located within 0.5 miles of 14 populated Census Blocks. As the population in these Census Blocks would be approximately 22 percent minority and as the poverty rate in the area is 4.3 percent, it is unlikely that operation and maintenance of Alternative E would disproportionately adversely affect these populations.

Indirect Effects

As the population in the vicinity of the Alternative E gen-tie route would not be considered low-income or minority, it is unlikely that indirect effects associated with operation and maintenance of Alternative E disproportionately adversely affect these populations.

Decommissioning

Direct Effects

Decommissioning activities associated with Alternative E would require similar equipment and activities as described for construction. Assuming that the population demographics of the area remain the same for the life of the project, the population in the vicinity of Alternative E would not be considered low-income or minority and it is unlikely that decommissioning would disproportionately adversely affect these populations.

Indirect Effects

As described for construction, decommissioning effects would be short-term and temporary in duration and would result in no indirect environmental justice effects.

Mitigation Measures

No mitigation measures are required to reduce effects related to special designations.

Residual Impacts and Unavoidable Adverse Effects

There would be no unavoidable significant environmental justice effects as a result of Alternative E.

4.16.15 Cumulative Effects

Geographic Scope

As described in Section 4.16.1, the project study area for environmental justice effects would be jurisdictions within 0.5 mile of the proposed project or its alternatives. Similarly, for environmental justice effects associated with the proposed project or its alternatives to combine with those of other projects, the environmental justice effects of the other projects would have to overlap the affected area of the proposed project or its alternatives. Assuming that other projects would also result in environmental justice effects within one-half mile of the project area, to overlap with the proposed project's affected area, these other projects would need to be within one mile of the proposed project or its alternatives. Additionally, as any environmental justice

effects generated by the proposed project or its alternatives would be limited to occurring within the lifespan of the project, cumulative environmental justice effects would also occur only during the lifespan of the project.

Table 4.16-1. Cumulative Projects within the Geographic Scope of Cumulative Analysis

Resource Area / BLM Program Area	Geographic Area of Consideration	Elements to Consider	BLM Authorized and Other Known County Projects/Actions/Activities
Environmental Justice	0.5 mile of the proposed project or its alternatives	Significant environmental impacts in the vicinity of the site	• Interstate 10 • Devers-Palo Verde No. 1 Transmission Line • West-wide Section 368 Energy Corridors • BLM Recreational Opportunities • Blythe Energy Project Transmission Line • Chuckwalla Valley Raceway • Desert Sunlight Solar Farm Project • Silverado Power Solar Project • Devers-Palo Verde No. 2 Transmission Line • Desert Southwest Transmission Line • Sol Orchard • SCE Red Bluff Substation

Cumulative Effects Analysis

Existing Cumulative Conditions

This section discusses the past projects that have occurred in the cumulative analysis area described above, in addition to ongoing projects in the area. Table 4.1-1 provides a list of past and present development in the proposed project vicinity. As the cumulative analysis area for environmental justice effects is within 0.5 mile of the project area, past and present development contributing to the cumulative conditions for environmental justice in the cumulative analysis area would include:

- Interstate 10,
- Devers–Palo Verde No. 1 Transmission Line,
- West-wide Section 368 Energy Corridors,
- BLM Recreational Opportunities,
- Blythe Energy Project Transmission Line, and,
- Chuckwalla Valley Raceway.

Reasonably Foreseeable Future Projects

Tables 4.1-2 provides a listing of reasonably foreseeable projects, including other proposed or approved renewable energy projects, various BLM-authorized actions/activities, proposed or approved projects within the County's jurisdiction, and other actions/activities that the Lead Agencies consider to be reasonably foreseeable. Of the cumulative projects listed in Table 4.1-2, the following foreseeable projects would be located in the cumulative effects area for environmental justice:

- Desert Sunlight Solar Farm Project,
- Silverado Power Solar Project
- Devers–Palo Verde No. 2 Transmission Line,
- Desert Southwest Transmission Line,
- Sol Orchard, and
- SCE Red Bluff Substation.

Most of the projects presented in Tables 4.1-1 and 4.1-2 have either undergone independent environmental review pursuant to NEPA and/or CEQA or will do so prior to approval. Even if environmental review has not yet been completed for projects determined to be located within the geographic extent of this cumulative analysis, the potential effects of all projects comprising the existing and reasonably foreseeable cumulative conditions relevant to the proposed DHSP were considered in the cumulative effects analyses in this EIS.

The environmental justice analyses for the Desert Sunlight Solar Farm Project, Devers–Palo Verde No. 2 and Desert Southwest Transmission Lines and the SCE Red Bluff Substation identified no high-minority or low-income populations within one-half mile of the project's transmission ROW in the vicinity of the proposed project or its alternatives. No environmental justice analysis has been performed for the Sol Orchard project at this time. As the minority and low-income populations within one-half mile of the proposed project or its alternatives would be less than 50 percent and lower than the respective overall populations in Riverside County, and no effects to high-minority and low-income populations would occur in the vicinity of the proposed project or its alternatives as a result of the Devers–Palo Verde No. 2 Transmission Line, Desert Southwest Transmission Line, and SCE Red Bluff Substation, effects associated with construction, operation and maintenance, or decommissioning would not result in disproportionate adverse effects on minority or low-income populations and the project/alternatives will not contribute to cumulative effects.

The No Action and No Project Alternatives (Alternatives 1, 2, 3, and A) would not contribute to any cumulative effects. In addition, Alternative B would not contribute to cumulative environmental justice effects, as the cumulative scenario assumes concurrent construction of the Desert Sunlight approved gen-tie and Alternative B conductor stringing using the same crew at the same time, with no additional work required for Alternative B beyond what is required for the Desert Sunlight gen-tie.

4.16.16 CEQA Considerations

Appendix G of the State CEQA Guidelines does not provide significance criteria for environmental justice. No significance determination has been made.

4.17 SPECIAL DESIGNATIONS

4.17.1 Methodology for Analysis

This section discusses effects on lands with special designations that would occur with implementation of the proposed project or alternatives. Direct effects may occur during construction from noise, fugitive dust, and lighting that could affect users in designated Areas of Critical Environmental Concern (ACEC) and/or Wilderness Areas (WA). Direct effects would occur if activities would disturb resources for which a special designations area was designated, in this case, the archaeological values in the Alligator Rock ACEC, the desert lily plants or habitat in the Desert Lily Preserve ACEC, desert tortoise in the Chuckwalla Desert Wildlife Management Area (DWMA), or wildlife in the Palen-Ford Wildlife Habitat Management Area (WHMA). Other direct effects would include impacts to the wilderness character of designated WAs, or visual impacts in WAs. A 2010 Joshua Tree National Park visitor survey revealed that three of the most important attributes/resources to visitor groups in the Park as a whole were views without development, clean air, natural quiet/sounds of nature, and dark, starry night skies (Jette et al. 2011). For Joshua Tree National Park, direct effects would include any project-related increase in ambient noise (35 dBA), night-time light pollution, or dust increases within the Park boundaries. Visual effects are discussed in further detail in Section 4.19. For cultural resources, a direct effect is limited to the direct physical disturbance of a historic property. Effects that are immediate but not physical in character, such as visual intrusion, and reasonably foreseeable effects that may occur at some point subsequent to the implementation of the proposed undertaking are indirect effects. Unavoidable adverse impacts are those that would occur after implementation of all incorporated mitigation measures. Unavoidable adverse impacts do not include temporary or permanent impacts which would be mitigated. Cultural Resource effects are discussed in further detail in Section 4.6.

4.17.2 Applicant Measures

No Applicant Measures have been proposed to reduce impacts to special designations.

4.17.3 Alternative 1 – No Action (No Plan Amendment)

Under Alternative 1, the proposed DHSP would not be approved by the BLM, and BLM would not amend the CDCA Plan. As a result, no solar energy project would be constructed on the project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended. As a result, impacts due to the DHSP would not occur.

4.17.4 Alternative 2 – No Project Alternative (with Plan Amendment to Find the Site Suitable for Solar Energy Development)

Under Alternative 2, the proposed DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site available for future solar energy development. As a result, the DHSP would not be constructed on the project site and BLM would manage the site consistent with the amended land use designation in the CDCA Plan. It is possible that, as a result of the CDCA Plan amendment, that in the future another solar energy generation project could be proposed with impacts similar to the DHSP, however, such impacts are speculative at this time and no impacts from the DHSP would occur.

4.17.5 Alternative 3 – No Project Alternative (with Plan Amendment to Find the Site Unsuitable for Solar Energy Development)

Under Alternative 3, the proposed DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site unavailable for future solar energy development. As a result, the DHSP would not be constructed on the project site and BLM would manage the site consistent with the amended land use designation in the CDCA Land Use Plan. No impacts from the DHSP would occur.

4.17.6 Alternative 4 – Proposed Solar Project

Construction

Direct Effects

Under this alternative, the BLM would approve Alternative 4 and would amend the CDCA Plan. Alternative 4 would affect 46 acres in the Palen-Ford WHMA and would be within 1.8 miles of the Joshua Tree Wilderness Area administered by the National Park Service, just over two miles west of the Desert Lily Preserve ACEC, and fewer than six miles from Alligator Rock ACEC.

Effects to vegetation and wildlife in special designation areas, including onsite impacts in the Palen-Ford WHMA and off-site impacts such as dust generation, weed introduction, and wildlife migration, are described in detail in Section 4.3, Biological Resources – Vegetation and Section 4.4, Biological Resources – Wildlife. The 46 acres of the WHMA that are within the DHSP project site are isolated from the remainder of the WHMA and key WHMA resources, including the dunes and playa system to the east, by the intervening DSSF project now under construction (see Figures 3.1-1 and 3.4-1). The functionality of this portion of the WHMA is thus reduced compared to the WHMA as a whole. As a result, the effects of the DHSP on this portion of the WHMA would be diminished but not eliminated. Impacts to vegetation and wildlife in the Palen-Ford WHMA would be addressed with a series of mitigation measures (MM VEG-1 through MM VEG-10). MM VEG-1, VEG-2, and VEG-10 would require monitoring and reporting by designated biologists to ensure impact minimization, including for Desert Dry Wash Woodland Habitat. MM VEG-3 and VEG-4 minimize impacts through worker training and construction best practices. MM VEG-5 helps protect resources by requiring development of a Vegetation Resources Management Plan. MM VEG-6 would require acquisition and management of off-site vegetation and habitat in perpetuity to offset the permanent loss of vegetation and habitat on the project site. This measure, while compensating for impacts to vegetation resources, would not prevent those impacts from occurring. Even with off-site compensation at recommended ratios, there would be a net loss of the native vegetation and related resources. MM VEG-7 and VEG-8 protect sensitive species and habitat, including jurisdictional areas. MM VEG-9 requires a weed management plan to protect resources from non-native and invasive species.

Fugitive dust, traffic and lighting from construction would create temporary visual distractions for users of the Joshua Tree Wilderness Area, Chuckwalla Mountains Wilderness Area, and Desert Lily Preserve ACEC areas. In particular, noise and nighttime lighting could affect the wilderness experience within these areas, making human presence more noticeable. Mitigation Measure VR-1 would require a number of actions, such as minimizing vegetation removal, to reduce construction related impacts to visual resources. Mitigation Measure NOI-2 would control construction noise relative to Joshua Tree National Park boundaries. Mitigation Measure VR-6

would control night lighting within the Park boundaries. Fugitive dust from construction would create a temporary visual distraction for a limited number of users of portions of these areas, although implementation of Mitigation Measure AIR-1 would restrict project-related generation of dust clouds within the Park and minimize dust in other special designation areas. Longer duration construction-related impacts would be addressed by Mitigation Measure VR-2, which requires successful revegetation of temporarily disturbed areas. It is also anticipated that some construction activity would take place at night, which would result in adverse night lighting visual effects. In order to ensure that substantial adverse construction lighting effects do not occur, Mitigation Measure VR-6 would reduce effects associated with night lighting by requiring strict lighting specifications and controls and operating parameters.

Construction of Alternative 4 would not result in any direct off-site impacts to cultural resources, as discussed in Section 4.6. Thus the Alligator Rock ACEC would not be affected by construction of Alternative 4.

Indirect Effects

Construction of Alternative 4 would not result in any indirect impacts to cultural resources located within Alligator Rock ACEC, as discussed in Section 4.6. Thus the Alligator Rock ACEC would not be affected by construction of Alternative 4.

For other special designation areas such as the Chuckwalla DWMA, Palen-Ford WHMA, and Desert Lily Preserve ACEC, indirect construction effects would include the introduction of invasive weeds, herbicide drift, and off-site hydrology impacts. Weeds introduced and/or spread through project-related activities could have indirect impacts not just to the immediate area on and surrounding the site, and if extensive, could impact regional special management areas including Joshua Tree Wilderness Area. This adverse impact would be minimized by Mitigation Measure MM VEG-9 (Prepare and Implement an Integrated Weed Management Plan), which would require the project owner to monitor weed occurrence throughout the project area, and to control substantial weed infestations. Complying with the measures and standard operating procedures in the Herbicide PFEIS, MM PHS-9, as well as other limitations described in the Draft IWMP, would avoid potential adverse effects of herbicides to native vegetation and special-status plants. Implementation of a Surface Water Protection Plan (SWPP; see Section 4.20, Water Resources) and Mitigation Measure MM VEG-8 (Implement Best Management Practices to Minimize Impacts to Jurisdictional Areas) during construction would reduce the alteration of water quality, hydrology, and depth to groundwater that would affect habitat in the Chuckwalla DWMA, Palen-Ford WHMA and Desert Lily Preserve ACEC.

The construction of Alternative 4 would also result in indirect visual effects related to an increase in traffic on roadways beyond the immediate project vicinity during construction. Although there would be an increase in vehicle trips on regional roads associated with construction related vehicles, it is not expected that, in the context of existing non-project related traffic, the increased traffic would be noticed by the casual observer, and therefore, the resulting visual effect would not be substantial.

Operation and Maintenance

Direct Effects

A limited number of visitors to a portion of Joshua Tree Wilderness Area would experience adverse effects to their opportunities for solitude. There would also be visual effects from the strong form, line, and color contrast of the solar panels and other structures and from sunlight glint and glare reflecting from these structures. While operation and maintenance would not cause any direct effect on the Joshua Tree Wilderness Area, visitors traversing the southwest areas of the Coxcomb Mountains from which the project is visible would experience permanent direct effects. These effects vary by viewing location, and are discussed in detail in Section 4.19, Visual Resources.

During operation and maintenance (O&M) of the O&M facility and substation, lights would be shielded, would be directed downward, and in the case of the substation would normally be off, but would be motion sensitive to minimize glare in surrounding areas. To accomplish this, effective implementation of Mitigation Measure VR-6, which would reduce adverse visual effects associated with night lighting by requiring strict lighting specifications and controls and operating parameters, would be essential. It is anticipated that the apparent color contrast of the facilities and graded surfaces can be further reduced through effective implementation of Mitigation Measures VR-2 (described above), VR-3, VR-4, and VR-5. Mitigation Measures VR-3 and VR-4, which require the project design to reduce visual contrast with surrounding areas through surface treatments and other actions, and Mitigation Measure VR-5, which further reduces contrast through a screening vegetation buffer, would all serve to minimize visual impacts to special designations throughout the life of the project. Section 4.19 includes a complete discussion of visual impacts and mitigation for the project.

Project operations could result in the generation of dust clouds that could adversely affect the experience of clean air and views of nature within Joshua Tree National Park. Mitigation Measure AIR-3 would restrict generation of project-related dust clouds in the Park by reducing the generation of dust onsite. Mitigation Measure AIR-4 would further reduce emissions from on-site dedicated equipment (i.e., equipment that would remain on site each day) reducing the possibility of emissions being visible from the Park.

Project O&M would not affect plants or wildlife on site after those plants or habitat are removed or damaged during initial construction. Vegetation management for facility operation could cause accidental off-site impacts due to herbicide drift or off-site hydrology impacts. Long-term impacts to habitat can be reduced through implementation of required Mitigation Measures MM VEG-1 through MM VEG-6. These measures would limit the initial disturbance areas and avoid off-site habitat degradation, require vegetation management on-site to minimize adverse off-site impacts, and require off-site compensation for habitat lost or degraded throughout the life of the project. Effects to vegetation and wildlife special designation areas, including onsite impacts in the Palen-Ford WHMA and Chuckwalla DWMA and off-site impacts such as dust generation, weed introduction, and wildlife migration, are described in detail in Section 4.3, Biological Resources – Vegetation and Section 4.4, Biological Resources – Wildlife.

O&M of Alternative 4 would not result in off-site impacts to cultural resources, as discussed in Section 4.6. Thus the Alligator Rock ACEC would not be directly affected by Alternative 4.

Indirect Effects

Construction of Alternative 4 would not result in any indirect impacts to cultural resources located within Alligator Rock ACEC, as discussed in Section 4.6. Thus the Alligator Rock ACEC would not be affected by construction of Alternative 4.

As described in Section 4.3, Biological Resources – Vegetation, the introduction or spread of invasive weeds and, potentially, depletion of groundwater and subsequent effects to groundwater-dependent vegetation could result in indirect impacts both on and off-site in special designation areas such as the Chuckwalla DWMA, Palen-Ford WHMA, Desert Lily Preserve ACEC, and Joshua Tree Wilderness Area. These adverse impacts would be minimized by Mitigation Measures MM VEG-8 (Implement Best Management Practices to Minimize Impacts to Jurisdictional Areas), MM VEG-9 (Prepare and Implement an Integrated Weed Management Plan), and MM PHS-9, as well as other limitations described in the Draft IWMP and implementation of a Surface Water Protection Plan (SWPP; see Section 4.20, Water Resources).

Decommissioning

Direct Effects

Decommissioning of Alternative 4 would cause temporary, indirect disturbance to a limited number of users of the Joshua Tree Wilderness Area and Desert Lily Preserve ACEC similar to those described for construction of the project. Facilities removal during decommissioning would be expected to take place within the approved project footprint and would not be expected to remove or degrade vegetation, special-status plants, or state-jurisdictional streambeds beyond the project boundaries, except through the effects of dust or similar direct off-site impacts. These impacts can be reduced through implementation of required Mitigation Measures MM VEG-1 through MM VEG-6, which would apply during decommissioning as they would during construction. If the ultimate re-use of the proposed project site is to return it to natural open space, then the expected recontouring and replanting during decommissioning would have a net benefit to habitat. Effects to vegetation and wildlife in the Chuckwalla DWMA and Palen-Ford WHMA are described in Section 4.3, Biological Resources – Vegetation and Section 4.4, Biological Resources – Wildlife.

Short-term, deconstruction activities would result in visual impacts similar to construction with the visible intrusion of equipment, materials, deconstruction activities, and increased road traffic. Longer-term, the complete removal of the facility would leave a very prominent visual effect over the entire site due to the strong color and line contrast created between graded, disturbed soil areas and undisturbed soil and vegetated areas absent such unnatural lines of demarcation and color contrasts. In addition, revegetation in this desert region is difficult and generally of limited success. Therefore, visual recovery from land disturbance associated with closure and decommissioning activities would likely occur only over a very long period of time. Mitigation Measure VR-2 requires the project owner to achieve site restoration to the extent feasible, pursuant to a Decommissioning Plan approved by the BLM.

Indirect Effects

Construction of Alternative 4 would not result in any indirect impacts to cultural resources located within Alligator Rock ACEC, as discussed in Section 4.6. Thus the Alligator Rock

ACEC would not be affected by construction of Alternative 4. Indirect decommissioning effects on biological resources in special designation areas would be similar to those described for construction. Impacts associated with invasive weed introduction, herbicide drift, and hydrologic impacts would be reduced through the implementation of Mitigation Measures MM VEG-8 (Implement Best Management Practices to Minimize Impacts to Jurisdictional Areas), MM VEG-9 (Prepare and Implement an Integrated Weed Management Plan), and MM PHS-9, as well as other limitations described in the Draft IWMP and implementation of a Surface Water Protection Plan (SWPP; see Section 4.20, Water Resources).

Mitigation Measures

The following mitigation measures would ensure that project-related effects to special designations would be reduced:

MM AIR-1 **Fugitive Dust Control Plan.** [full text of measure in Section 4.2]

MM AIR-3 **Control Operational Fugitive Dust.** [full text of measure in Section 4.2]

MM AIR-4 **Control Equipment Emissions**. [full text of measure in Section 4.2]

MM NOI-2 **No Net Increase in Ambient Noise within Joshua Tree National Park.** [full text of measure in Section 4.12]

MM VEG-1 **Assign a Designated Biologist and Biological Monitors.** [full text of measure in Section 4.03]

MM VEG-2 **Conduct Biological Monitoring and Reporting during Project Construction, Operations, and Decommissioning.** [full text of measure in Section 4.03]

MM VEG-3 **Prepare and Implement a Worker Environmental Awareness Program (WEAP).** [full text of measure in Section 4.03]

MM VEG-4 **Minimize Construction-Related Impacts.** [full text of measure in Section 4.03]

MM VEG-5 **Prepare and Implement a Vegetation Resources Management Plan.** [full text of measure in Section 4.03]

MM VEG-6 **Provide Off-Site Compensation for Impacts to Vegetation and Habitat.** [full text of measure in Section 4.03]

MM VEG-8 **Implement Best Management Practices to Minimize Impacts to Jurisdictional Areas.** [full text of measure in Section 4.03]

MM VEG-9 **Prepare and Implement an Integrated Weed Management Plan.** [full text of measure in Section 4.03]

MM VR-1 **Reduce Construction Related Impacts.** [full text of measure in Section 4.19]

MM VR-2 **Revegetation.** [full text of measure in Section 4.19]

MM VR-3 **Project Design to Reduce Visual Contrast.** [full text of measure in Section 4.19]

MM VR-4 **Surface Treatment of Project Structures/Buildings.** [full text of measure in Section 4.19]

MM VR-5 **Screening Vegetation Buffer.** [full text of measure in Section 4.19]

MM VR-6 **Night Light Control.** [full text of measure in Section 4.19]

Residual Impacts and Unavoidable Adverse Effects

While compensating for impacts to vegetation resources, MM VEG-6 would not prevent those habitat impacts from occurring in Chuckwalla DWMA, Palen-Ford WHMA, Desert Lily ACEC, and Joshua Tree Wilderness Area. Even with off-site compensation at recommended ratios, there would be a net loss of the native vegetation and related resources (including habitat and streambed values). However, habitat compensation, which is expected to prevent future losses of habitat in the aggregate by placing a permanent conservation easement and deed restrictions on private lands that could otherwise be converted for urban, agricultural, or energy development, would reduce the regional significance of these losses over time. Residual adverse impacts (i.e., impacts remaining after application of mitigation) to vegetation resources would be (1) the net loss of vegetation and habitat on the project site; (2) the direct effects of dust, and other disturbances to adjacent off-site habitat during construction, operation, and decommissioning of the facility; (3) the net loss of special-status plant occurrences on the project site; and (4) the net loss of state-jurisdictional streambeds and associated habitat on the site and, potentially, off-site, if groundwater pumping causes off-site impacts.

Alligator Rock ACEC would not be affected by construction of Alternative 4.

It is expected that even with effective implementation of Mitigation Measures VR-1 and VR-2, the residual effects associated with land scarring and vegetation clearance from Alternative 4 would remain for many years given the difficulty of successful revegetation in an arid environment. Given the scale of the solar facility and the availability of considerable visual access to the Alternative 4 area, even with effective implementation of Mitigation Measures VR-2, VR-3, VR-4, and VR-5, the residual effects associated with introduced visual contrast from installation of Alternative 4 would remain for the life of the project. Additionally, given the scale of Alternative 4 and the availability of elevated viewing perspectives from surrounding wilderness areas that overlook the northern Chuckwalla Valley, even with effective implementation of Mitigation Measures VR-2, VR-3, VR-4, and VR-5, the residual effect associated with the prominence of Alternative 4 and the introduction of industrial character and structural visual contrast to the field of view from backcountry scenic vistas would still result in substantial adverse visual effects. Although the levels of change caused by Alternative 4 would be allowed under the Interim VRM Class IV management objective, the solar facility would be inconsistent, after mitigation, with the following Riverside County General Plan policies: LU 4.1, LU 13.1, LU 13.3, LU 13.5, LU 13.8, LU 20.1, LU 20.2, LU 20.4, DCAP 2.3, DCAP 9.1, and DCAP 10.1. These would result in an unavoidable, long-term adverse effect to visual resources.

4.17.7 Alternative 5 – Solar Project Excluding WHMA

Construction

Direct Effects

Under this alternative, the BLM would approve Alternative 5 and would amend the CDCA Plan. While Alternative 5 would exclude the portion of the site within the Palen-Ford WHMA, the boundaries of the project would otherwise be the same as described for Alternative 4. Under Alternative 5, the project site would eliminate all direct impacts to the Palen-Ford WHMA. Alternative 5 would be within two miles of the Joshua Tree Wilderness Area administered by the National Park Service, just over two miles west of the Desert Lily Preserve ACEC, and less than six miles from Alligator Rock ACEC. Consequently, the effects resulting from construction of Alternative 5 would be the same as those described for Alternative 4, although direct effects on the Palen-Ford WHMA would be eliminated.

Indirect Effects

Indirect effects on Alligator Rock associated with Alternative 5 would be the same as described for Alternative 4.

While direct biological resource impacts in the Palen-Ford WHMA would not occur under Alternative 5, due to its location adjacent to the facility site, the indirect effects described above for Alternative 4 would still affect the Palen-Ford WHMA. As described above for Alternative 4, the introduction or spread of invasive weeds and, potentially, depletion of groundwater and subsequent effects to groundwater-dependent vegetation could result in indirect impacts both on and off-site in special designation areas such as the Chuckwalla DWMA, Palen-Ford WHMA, Desert Lily Preserve ACEC, and Joshua Tree Wilderness Area. These adverse impacts would be minimized by Mitigation Measures MM VEG-8 (Implement Best Management Practices to Minimize Impacts to Jurisdictional Areas), MM VEG-9 (Prepare and Implement an Integrated Weed Management Plan), and MM PHS-9, as well as other limitations described in the Draft IWMP and implementation of a Surface Water Protection Plan (SWPP; see Section 4.20, Water Resources).

Operation and Maintenance

Direct Effects

As described above for construction of Alternative 5, operation and maintenance of Alternative 5 would result in the same effects as described for Alternative 4, although direct effects on the Palen-Ford WHMA would be eliminated.

Indirect Effects

O&M impacts of Alternative 5 would be the same as described for Alternative 4 with regard to impacts to the Alligator Rock ACEC.

As described above for construction, while Alternative 5 would not result in direct impacts to Palen-Ford WHMA, the indirect effects described above for Alternative 4 would still affect the Palen-Ford WHMA. Consequently, the indirect effects of Alternative 5 on the Chuckwalla DWMA, Palen-Ford WHMA, Desert Lily Preserve ACEC, and Joshua Tree Wilderness Area would be the same as described for Alternative 4.

Decommissioning

Direct Effects

Direct effects associated with decommissioning activities for Alternative 5 would be the same as those described for Alternative 4, although direct effects on the Palen-Ford WHMA would be eliminated.

Indirect Effects

As described for construction, decommissioning effects on Alligator Rock associated with Alternative 5 would be the same as described for Alternative 4.

Indirect decommissioning effects on biological resources in special designation areas would be the same as those described for Alternative 4 even though facility components would not be located within the Palen-Ford WHMA. Consequently, the indirect effects of decommissioning Alternative 5 on the Chuckwalla DWMA, Palen-Ford WHMA, Desert Lily Preserve ACEC, and Joshua Tree Wilderness Area would be the same as described for Alternative 4.

Mitigation Measures

The Mitigation Measures MM VEG-1 through VEG-6, MM VEG-8, MM VEG-9, and MM VR-1 through VR-6 are required to reduce adverse effects on special designations.

Residual Impacts and Unavoidable Adverse Effects

Residual effects of Alternative 5 to areas with special designations would be the same as those described in Section 4.17.6 for the residual effects of Alternative 4, except that the direct effects to the Palen WHMA would be eliminated and impacts to vegetation and habitat would be reduced by 47 acres from 1,208 to 1,161.

4.17.8 Alternative 6 – Reduced Footprint Solar Project

Construction

Direct Effects

Under this alternative, the BLM would approve the Alternative 6 and would amend the CDCA Plan of 1980, as amended. While Alternative 6 would exclude the 155-acre southern parcel of the project and a small portion of the northern parcel that contains a sensitive plant species, the boundaries of the project would otherwise be the same as described for Alternative 4. Under Alternative 6, the project site would affect the Palen WHMA. However, as stated above, the DHSP would affect the mapped WHMA boundary, but it would not affect many of the key the resources the WHMA was created to protect. Alternative 6 would be within two miles of the Joshua Tree Wilderness Area administered by the National Park Service, just over two miles west of the Desert Lily Preserve ACEC, and less than six miles from Alligator Rock ACEC. Alternative 6 would eliminate any impacts to the separate southwestern portion of the site but would not eliminate impacts to special designation areas. Consequently, the direct impacts resulting from construction of Alternative 6 would be functionally the same as those described for Alternative 4.

Indirect Effects

While Alternative 6 would eliminate any impacts to the separate southwestern portion of the site, this would not eliminate any impacts to special designation areas. Consequently, the indirect impacts resulting from construction of Alternative 6 would be the same as those described for Alternative 4.

Operation and Maintenance

Direct Effects

Operation and maintenance of Alternative 6 would result in the same effects as described for Alternative 4.

Indirect Effects

Indirect effects resulting from operation and maintenance of Alternative 6 would also be the same as described for Alternative 4.

Decommissioning

Direct effects associated with decommissioning activities for Alternative 6 would be the same as those described for Alternative 4.

Indirect Effects

Indirect effects associated with decommissioning activities for Alternative 6 would be the same as those described for Alternative 4.

Mitigation Measures

The Mitigation Measures MM VEG-1 through VEG-6, MM VEG-8, MM VEG-9, and MM VR-1 through VR-6 are required to reduce adverse effects on special designations.

Residual Impacts and Unavoidable Adverse Effects

Residual effects of Alternative 6 to areas with special designations would be the same as those described in Section 4.17.6 for the residual effects of Alternative 4, except that impacts to vegetation and habitat would be reduced by 164 acres from 1,208 to 1,044.

4.17.9 Alternative 7 – High-Profile Reduced Footprint Solar Project

Construction

Direct Effects

Under this alternative, the BLM would approve the Alternative 7 and would amend the CDCA Plan of 1980, as amended. While Alternative 7 would exclude the 155-acre southern parcel of the project and a small portion of the northern parcel that contains a sensitive plant species, the boundaries of the project would otherwise be the same as described for Alternative 4 and the views of Alternative 7 from land with special designation would be similar. Under Alternative 7, the project site would affect the Palen WHMA. However, as stated above, the DHSP would affect the mapped WHMA boundary, but it would not affect many of the key resources the

WHMA was created to protect (e.g., Mojave fringe-toed lizard, Section 3.4.5). Alternative 7 would be within two miles of the Joshua Tree Wilderness Area administered by the National Park Service, just over two miles west of the Desert Lily Preserve ACEC, and less than six miles from Alligator Rock ACEC. Alternative 7 would eliminate any impacts to the separate southwestern portion of the site but would not eliminate impacts to special designation areas. Consequently, the direct impacts resulting from construction of Alternative 7 would be functionally the same as those described for Alternative 4.

Indirect Effects

While Alternative 7 would eliminate any impacts to the separate southwestern portion of the site, this would not eliminate any impacts to special designation areas. Consequently, the indirect impacts resulting from construction of Alternative 7 would be the same as those described for Alternative 4.

Operation and Maintenance

Direct Effects

Operation and maintenance of Alternative 7 would result in the same effects as described for Alternative 4.

Indirect Effects

Indirect effects resulting from operation and maintenance of Alternative 7 would also be the same as described for Alternative 4.

Decommissioning

Direct effects associated with decommissioning activities for Alternative 7 would be the same as those described for Alternative 4.

Indirect Effects

Indirect effects associated with decommissioning activities for Alternative 7 would be the same as those described for Alternative 4.

Mitigation Measures

The Mitigation Measures MM VEG-1 through VEG-6, MM VEG-8, MM VEG-9, and MM VR-1 through VR-6 are required to reduce adverse effects on special designations.

Residual Impacts and Unavoidable Adverse Effects

Residual effects of Alternative 7 to areas with special designations would be the same as those described in Section 4.17.6 for the residual effects of Alternative 4, except that impacts to vegetation and habitat would be reduced by 164 acres from 1,208 to 1,044.

4.17.10 Alternative A – No Gen-Tie

This No Action Alternative under NEPA defines the scenario that would exist if the proposed gen-tie line were not constructed and no plan amendment was issued. If this No Action Alterna-

tive were selected, the impacts of project construction, operation, decommissioning; as well as cumulative impacts of the project's gen-tie line, would not occur. There would be no project-related disturbance of the ground at the tower locations and pull sites, no disturbance of desert vegetation and habitat, and no installation of transmission equipment.

4.17.11 Alternative B – Proposed Gen-Tie (Shared Towers)

Construction

Direct Effects

Alternative B would be consistent with the CDCA Plan requirements related to the location of 161 kV transmission lines because the Record of Decision for the adjacent Desert Sunlight Project allowed a transmission line above 161 kV in the proposed Alternative B ROW. The proposed gen-tie route under Alternative B would be 3.3 miles east of Joshua Tree National Park, 5.0 miles west and 4.0 miles south of the Desert Lily Preserve ACEC, 0.75 miles north of the Chuckwalla Mountains Wilderness Area, 0.33 miles northeast of the Alligator Rock ACEC, and would parallel the eastern border of the Chuckwalla DWMA for 5.0 miles. Fugitive dust, traffic and lighting from construction would create temporary visual distractions for users of these areas. In particular, noise and nighttime lighting could affect the wilderness experience within these areas, making human presence more noticeable. To address those impacts disturbed soils would have to be controlled properly as required in Mitigation Measure VR-1 in order to reduce dust generation. Longer duration construction-related impacts would be addressed by Mitigation Measure VR-2, which requires successful revegetation of temporarily disturbed areas. It is also anticipated that some construction activity would take place at night, which would result in adverse night lighting visual effects. In order to ensure that adverse construction lighting effects do not occur, Mitigation Measure VR-6 would reduce effects associated with night lighting by requiring strict lighting specifications and controls and operating parameters.

As construction of Alternative B would not result in any direct off-site impacts to cultural resources, the Alligator Rock ACEC would not be affected by construction of Alternative B.

Effects to vegetation and wildlife in the Chuckwalla DWMA and off-site impacts such as dust generation, weed introduction, and wildlife migration, are described in detail in Section 4.3, Biological Resources – Vegetation and Section 4.4, Biological Resources – Wildlife. Impacts to vegetation and wildlife in Chuckwalla DWMA would be addressed with a series of mitigation measures (MM VEG-1 through MM VEG-10). As described above for Alternative 4, some of these measures would mitigate adverse impacts to vegetation resources by preventing the impacts from occurring and others would minimize adverse impacts on the project site and prevent them in adjacent off-site habitats. MM VEG-6 would require acquisition and management of off-site vegetation and habitat in perpetuity to offset the permanent loss of vegetation and habitat on the project site, but would not prevent those impacts from occurring. With off-site compensation at recommended ratios, there would be a net loss of the native vegetation and related resources. Under the Northern and Eastern Colorado Desert Coordinated Management Plan (NECO), development is allowed in one percent of the DWMA. The BLM-administered portion of the DWMA is approximately 465,287 acres in size; therefore, development of Alternative B would represent a negligible percentage of the allowable development in the DWMA.

Indirect Effects

As described in Section 4.6, Cultural Resources, adverse indirect visual, auditory, and atmospheric effects as a result of the construction Alternative B may occur to the North Chuckwalla Petroglyph District (CA-Riv-1383, NRHP listed) and segments of a prehistoric Coco-Maricopa Trail (CA-Riv-053T, NRHP eligible). Therefore, the Alligator Rock ACEC may be adversely effected by construction of Alternative B. These adverse effects would be minimized by Mitigation Measures MM CUL-1 through CUL-9, and measures developed as part of the MOA.The introduction or spread of invasive weeds could result in indirect impacts both on and off-site in special designation areas such as the Chuckwalla DWMA, Palen-Ford WHMA, Desert Lily Preserve ACEC, and Joshua Tree Wilderness Area. These adverse impacts would be minimized by Mitigation Measures MM VEG-8 (Implement Best Management Practices to Minimize Impacts to Jurisdictional Areas), MM VEG-9 (Prepare and Implement an Integrated Weed Management Plan), and MM PHS-9.

Construction of Alternative B would also result in an increase in vehicle trips on regional roads associated with construction related vehicles, although it is not expected that, in the context of existing non-project-related traffic, the increased traffic would be noticed by the casual observer; therefore, the resulting visual effect would not be substantial.

Operation and Maintenance

Direct Effects

A limited number of visitors to a portion of Joshua Tree Wilderness, Chuckwalla Mountains Wilderness, and Desert Lily Preserve ACEC would experience adverse effects on their opportunities for solitude. There would be visual effects from the strong form, line, and color contrast of the transmission towers and from sunlight glint and glare reflecting from these structures. While operation and maintenance would not cause any direct effect on the Joshua Tree Wilderness and Chuckwalla Mountains Wilderness, visitors traversing the southwest areas of the Coxcomb Mountains and northern Chuckwalla Mountains would experience permanent direct effects. These effects vary by viewing location, and are discussed in detail in Section 4.19, Visual Resources.

Alternative B O&M would not affect plants or wildlife on site after those plants or habitat is removed or damaged during initial construction. However, vegetation management for facility maintenance could cause accidental off-site impacts, due to herbicide drift or off-site hydrology impacts. Long-term impacts to habitat can be reduced through implementation of required Mitigation Measures MM VEG-1 through MM VEG-6. These measures would limit the initial disturbance areas and avoid off-site habitat degradation; require vegetation management on-site to minimize adverse off-site impacts, and require off-site compensation for habitat lost or degraded throughout the life of the project. Effects to vegetation and wildlife special designation areas, including impacts in the Chuckwalla DWMA and off-site impacts such as dust generation, weed introduction, and wildlife migration, are described in detail in Section 4.3, Biological Resources – Vegetation and Section 4.4, Biological Resources – Wildlife.

As O&M of Alternative B would not result in off-site impacts to cultural resources, the Alligator Rock ACEC would not be directly affected by Alternative B.

Indirect Effects

As described in Section 4.6, Cultural Resources, adverse indirect visual, auditory, and atmospheric effects as a result of the operation and maintenance of Alternative B may occur to the North Chuckwalla Petroglyph District (CA-Riv-1383, NRHP listed) and segments of a prehistoric Coco-Maricopa Trail (CA-Riv-053T, NRHP eligible). Therefore, the Alligator Rock ACEC may be adversely effected by construction of Alternative B. These adverse effects would be minimized by Mitigation Measures MM CUL-1 through CUL-9, and measures developed as part of the MOA.

As described in Section 4.3, Biological Resources – Vegetation, the introduction or spread of invasive weeds could result in indirect impacts both on and off-site in special designation areas such as the Chuckwalla DWMA, Palen-Ford WHMA, Desert Lily Preserve ACEC, and Joshua Tree Wilderness Area. These adverse impacts would be minimized by Mitigation Measures MM VEG-8 (Implement Best Management Practices to Minimize Impacts to Jurisdictional Areas), MM VEG-9 (Prepare and Implement an Integrated Weed Management Plan), and MM PHS-9.

Decommissioning

Direct Effects

Decommissioning of Alternative B would cause temporary, indirect disturbance to a limited number of users of the Joshua Tree Wilderness Area and Desert Lily Preserve ACEC similar to those described for construction of the project. Facilities removal during decommissioning would be expected to take place within the approved project footprint, and would not be expected to remove or degrade vegetation, special-status plants, or state-jurisdictional streambeds beyond the project boundaries, except through the effects of dust or similar direct off-site impacts. These impacts can be reduced through implementation of required Mitigation Measures MM VEG-1 through MM VEG-6, which would apply during decommissioning as they would during construction. If the ultimate re-use of the proposed project site is to return it to natural open space, then the expected recontouring and replanting during decommissioning would have a net benefit to habitat.

Longer-term complete removal of the transmission structures would leave a very prominent visual effect throughout the entire ROW due to the strong color and line contrast created between disturbed soil areas and undisturbed soil and vegetated areas absent such unnatural lines of demarcation and color contrasts. In addition, revegetation in this desert region is difficult and generally of limited success. Therefore, visual recovery from land disturbance associated with closure and decommissioning activities would likely occur only over a very long period of time. However, Mitigation Measure VR-2 requires the project owner to achieve site restoration to the extent feasible, pursuant to a Decommissioning Plan approved by the BLM.

Indirect Effects

As described in Section 4.6, Cultural Resources, adverse indirect visual, auditory, and atmospheric effects as a result of the decommissioning of Alternative B may occur to the North Chuckwalla Petroglyph District (CA-Riv-1383, NRHP listed) and segments of a prehistoric Coco-Maricopa Trail (CA-Riv-053T, NRHP eligible). Therefore, the Alligator Rock ACEC may be adversely effected by construction of Alternative B. These adverse effects would be minimized

by Mitigation Measures MM CUL-1 through CUL-9, and measures developed as part of the MOA.

After Alternative B has been decommissioned, however, any permanent visual effects described for operation and maintenance of the project would be removed and the site would return to its natural undeveloped state.

Indirect decommissioning effects on biological resources in special designation areas would be the same as described for Alternative B construction. Consequently, the indirect effects of decommissioning Alternative B on the Chuckwalla DWMA, Palen-Ford WHMA, Desert Lily Preserve ACEC, and Joshua Tree Wilderness Area would be the same as described for construction of Alternative B.

Mitigation Measures

The Mitigation Measures MM VEG-1 through VEG-6, MM VEG-8, MM VEG-9, and MM VR-1 through VR-6 are required to reduce adverse effects on special designations.

Residual Impacts and Unavoidable Adverse Effects

While compensating for impacts to vegetation resources, MM VEG-6 would not prevent those habitat impacts from occurring in Chuckwalla DWMA, Palen-Ford WHMA, Desert Lily ACEC, and Joshua Tree Wilderness Area. Even with off-site compensation at recommended ratios, there would be a net loss of the native vegetation and related resources (including habitat and streambed values). Residual adverse impacts (i.e., impacts remaining after application of mitigation) to vegetation resources would be (1) the net loss of vegetation and habitat on the project site; (2) the direct effects of dust, and other disturbances to adjacent off-site habitat during construction, operation, and decommissioning of the facility; (3) the net loss of special-status plant occurrences on the project site; and (4) the net loss of state-jurisdictional streambeds and associated habitat on the site and, potentially, off-site, if groundwater pumping causes off-site impacts.

Given the scale of the transmission structures and the availability of considerable visual access to the Alternative B area, even with effective implementation of Mitigation Measures VR-1 through VR-6, the residual effects associated with landscape scarring, introduced visual contrast from installation of facilities, and introduction of industrial character and structural visual contrast would still result in substantial adverse visual effects. Although the levels of change caused by Alternative B would be allowed under the Interim VRM Class IV management objective, the solar facility would be inconsistent, after mitigation, with the following Riverside County General Plan policies: LU 4.1, LU 13.1, LU 13.3, LU 13.5, LU 13.8, LU 20.1, LU 20.2, LU 20.4, DCAP 2.3, DCAP 9.1, and DCAP 10.1. These would result in an unavoidable, long-term adverse effect to visual resources.

4.17.12 Alternative C – Separate Transmission Towers within Same ROW

Construction

Direct Effects

Under this alternative, the BLM would approve Alternative C and would amend the CDCA Plan of 1980, as amended, to allow the 161-kV line outside an existing corridor. The route of the pro-

posed gen-tie line under Alternative C would be identical to that described above for Alternative B, but would include a set of transmission towers paralleling the approved Desert Sunlight gen-tie line. As this alternative would require a second set of transmission towers in addition to those towers approved for Desert Sunlight, there would be twice as much construction activity in the transmission corridor. Construction would result in identical impacts to those described for Alternative B, although with greater intensity.

Indirect Effects

Indirect construction effects would be identical to those described for Alternative B, although with greater intensity.

Operation and Maintenance

Direct Effects

Operation and maintenance of Alternative C would result in the same types of effects as described for Alternative B, although with a greater intensity.

Indirect Effects

Indirect effects resulting from operation and maintenance of Alternative C would also be the same types as described for Alternative B, although with a greater intensity.

Decommissioning

Direct Effects

Direct effects associated with decommissioning activities for Alternative C would be the same types as those described for Alternative B.

Indirect Effects

Indirect effects associated with decommissioning activities for Alternative C would be the same types as those described for Alternative B.

Mitigation Measures

The Mitigation Measures MM VEG-1 through VEG-6, MM VEG-8, MM VEG-9, MM CUL-1 through CUL-9, and MM VR-1 through MM VR-6 are required to reduce adverse effects on special designations.

Residual Impacts and Unavoidable Adverse Effects

Residual impacts and unavoidable adverse effects would be the same as described for Alternative B.

4.17.13 Alternative D – Cross-Valley Alignment

Construction

Direct Effects

Under this alternative, the BLM would approve Alternative D and would amend the CDCA Plan of 1980, as amended, to allow the 161-kV line outside an existing corridor. The proposed gen-tie route under Alternative D would avoid traversing Chuckwalla DWMA lands near the proposed solar site, although it would run adjacent to the eastern border of the DWMA for 500 feet before turning southeast. At the southern end of Alternative D, the gen-tie would follow the western border of the Palen-Ford WHMA for 2.2 miles before it would cross Interstate 10 (I-10) and traverse the Chuckwalla DWMA for 0.75 miles before entering the proposed Red Bluff Substation. Alternative D would be 3.6 miles east of Joshua Tree National Park, 2.2 miles southwest of the Desert Lily Preserve ACEC, 0.75 miles north of the Chuckwalla Mountains Wilderness Area, and 0.6 miles northeast of the Alligator Rock ACEC. Construction of Alternative D would result in impacts similar to those described for Alternative B, although with somewhat greater intensity because it would require construction of a new transmission line, rather than use of shared towers.

Indirect Effects

Indirect effects as a result of construction are similar to those described for Alternative B, although with somewhat greater intensity.

Operation and Maintenance

Direct Effects

As described above for construction of Alternative D, operation and maintenance of Alternative D would result in the same types of effects as described for Alternative B, although with a somewhat greater intensity.

Indirect Effects

Indirect effects resulting from operation and maintenance of Alternative D would also be the same types as described for Alternative B, although with a somewhat greater intensity.

Decommissioning

Direct Effects

Direct effects associated with decommissioning activities for Alternative D would be the same types as those described for Alternative B.

Indirect Effects

Indirect effects associated with decommissioning activities for Alternative D would be the same types as those described for Alternative B.

Mitigation Measures

The Mitigation Measures MM VEG-1 through VEG-6, MM VEG-8, MM VEG-9, MM CUL-1 through CUL-9, and MM VR-1 through MM VR-6 are required to reduce adverse effects on special designations.

Residual Impacts and Unavoidable Adverse Effects

Residual impacts and unavoidable adverse effects would be the same as described for Alternative B.

4.17.14 Alternative E – New Cross-Valley Alignment

Construction

Direct Effects

Under this alternative, the BLM would approve Alternative E and would amend the CDCA Plan of 1980, as amended, to allow the 161-kV line outside an existing corridor. The proposed gen-tie route under Alternative E would avoid traversing Chuckwalla DWMA lands near the proposed solar site at the northern end of the route. At the southern end of Alternative E, the gen-tie would traverse the Palen-Ford WHMA for 5.75 miles and run along the western border of the WHMA for 1.1 miles before it would cross Interstate 10 (I-10) and traverse the Chuckwalla DWMA for 0.75 miles before entering the proposed Red Bluff Substation. Alternative E would be 2.5 miles southeast of Joshua Tree National Park, 0.4 miles south of the Desert Lily Preserve ACEC, 0.8 miles northeast of the Alligator Rock ACEC, and 0.75 miles north of the Chuckwalla Mountains Wilderness Area. Construction of Alternative E would result in identical impacts to those described for Alternative B, although with somewhat greater intensity because it would require construction of a new transmission line, rather than use of shared towers.

Indirect Effects

Indirect effects as a result of construction are identical to those described for Alternative B, although with greater intensity due to the proximity between Alternative E and the Desert Lily Preserve ACEC.

Operation and Maintenance

Direct Effects

As described above for construction of Alternative E, operation and maintenance of Alternative E would result in the same types of effects as described for Alternative B, although with a somewhat greater intensity.

Indirect Effects

Indirect effects resulting from operation and maintenance of Alternative E would also be the same types as described for Alternative B, although with a somewhat greater intensity.

Decommissioning

Direct Effects

Direct effects associated with decommissioning activities for Alternative E would be the same types as those described for Alternative B.

Indirect Effects

Indirect effects associated with decommissioning activities for Alternative E would be the same types as those described for Alternative B.

Mitigation Measures

The Mitigation Measures MM VEG-1 through VEG-6, MM VEG-8, MM VEG-9, MM CUL-1 through CUL-9, and MM VR-1 through MM VR-6 are required to reduce adverse effects on special designations.

Residual Impacts and Unavoidable Adverse Effects

Residual impacts and unavoidable adverse effects would be the same as described for Alternative B.

4.17.15 Project Related Impacts to National Park Service Managed Lands

The purpose of this subsection is to summarize the direct, indirect and cumulative effects of the project on lands under the authority of the National Park Service; namely, Joshua Tree National Park (JTNP) and Joshua Tree Wilderness. The effects are summarized below for the topics of viewshed, air quality, noise, wildlife, construction workers, and dark skies. Additional discussion associated with National Park Service lands is located in Sections 3.2 (Air Resources), 3.4 (Biological Resources – Wildlife), 3.12 (Noise and Vibration), 3.14 (Recreation), 3.15 (Social and Economic Setting), 3.19 (Visual Resources), 3.20 (Water Resources), 4.2 (Air Resources), 4.4 (Biological Resources – Wildlife), 4.12 (Noise and Vibration), 3.14 (Recreation), 4.15 (Social and Economic Setting), 4.19 (Visual Resources), and 4.20 (Water Resources).

Viewshed

Direct Effects

Construction of the DHSP would cause temporary visual effects due to the presence of equipment, materials, and workforce. Construction would involve the use of cranes, heavy construction equipment, temporary storage and office facilities, and temporary laydown/staging areas. Construction would include site clearing and grading, construction of the actual facilities, and site cleanup and restoration. Grading activities have the potential to generate dust clouds, which can be visually distracting if not controlled properly as required in Mitigation Measure VR-1. Construction activities would be visible from portions of the Joshua Tree Wilderness in Joshua Tree National Park. Throughout the construction period, the industrial character of the activities would constitute adverse visual effects. However, the majority of construction activities and equipment brought onto the project site would be temporary in nature. The vast majority of the area disturbed by construction would eventually be occupied by project facilities, though some areas of disturbed soil surfaces (characterized by high color, line, and texture contrasts) would

still remain and would be visible from the various viewing vantage points due to the difficulty and limited success of revegetation of areas in this desert region. Thus, visual recovery from residual land disturbance would likely occur only over a very long period of time and would require successful restoration as stipulated in Mitigation Measure VR-2. In order to ensure that substantial adverse construction lighting effects do not occur, Mitigation Measure VR-6 is required to reduce effects associated with night lighting by requiring strict lighting specifications and controls and operating parameters.

In addition to the direct visual resource impacts, the construction of the DHSP would also result in one indirect visual effect. Specifically, visual effects related to an increase in traffic on roadways beyond the immediate project vicinity during construction. Although there would be an increase in vehicle trips on regional roads associated with construction related vehicles, it is not expected that, in the context of existing non-project related traffic, the increased traffic would be noticed by the casual observer in Joshua Tree National Park, and therefore, the resulting visual effect would not be substantial.

The operational effects are representative of the visual effects that would be experienced from similar locations, including both lower elevation and elevated viewing opportunities, in the surrounding perimeters of Joshua Tree Wilderness and Joshua Tree National Park. While much of this area of the national park is more remote, less accessible, and less used relative to the more accessible regions of the park to the west and north, the area is still an important destination for its geological, backcountry wilderness, and dark sky values. With increasing distance from the project site, project effects become less discernible. The lower elevation viewpoint at KOP 1 in the Eagle Mountains within the Joshua Tree Wilderness Area illustrates effect of perspective foreshortening, which reduces the apparent size and scale of the project due to a low elevation difference and the narrow angle of view. At the greater viewing distances, the proposed project would result in greater visual effects at the elevated viewpoints (illustrated by KOP 2) as the increased elevation causes the size and shape of the project area to become increasingly apparent, along with its associated form, line, and color visual contrasts.

As illustrated in the viewshed maps presented as Figures 3.19-1A (solar panels) and 3.19-1B (transmission structures), the number of impacted National Park acres within the DHSP viewshed totals 37,508 acres, which represents approximately 4.8 percent of the park's 776,083 total acres. Approximately two-thirds of the impacted acres (25,314 acres) would have views of the solar facility. Furthermore, of the 37,508 impacted park acres, only 7,344 acres, or slightly less than one percent of the park's total acreage, would be within the foreground/middleground viewing distance zone of five miles or less. Another 27,821 acres, or approximately 3.6 percent of the park's total acreage, would be in the background distance zone of 5 to 15 miles. The remaining 2,343 impacted park acres (approximately 0.3 percent of the total park acreage) would be more than 15 miles from the solar facility site. While the total number of impacted park acres is small relative to the whole, all of the park's acreage is important from both a public visitation and sensitivity standpoint and resource protection standpoint.

Of particular concern is the solar facility's potential effect on the Dark Sky resource that Joshua Tree National Park is known for throughout the National Park System. It is estimated that only approximately 10 percent of the population of the United States is able to see the night sky in its natural, unpolluted state. Joshua Tree National Park is noted for initiating partnerships with surrounding communities in an effort to limit light from spilling over park boundaries. To serve

this increasing public interest, Joshua Tree National Park offers a variety of Night Sky programs. In the immediate solar facility region, Dark Sky visitors access the east end of the Pinto Basin at the access gate adjacent to KOP 1. Because any light source in the desert contributes to ambient light pollution and all light sources are adversely cumulative in terms of the effect on human darkness adaptation and the dwindling availability of Dark Sky observation areas, it is essential that substantial steps be taken to ensure that additional night sky light pollution does not occur from implementation of the DHSP. To accomplish this, effective implementation of Mitigation Measure VR-6, which would reduce adverse visual effects associated with night lighting by requiring strict lighting specifications and controls and operating parameters, would be essential.

The view from KOP 1 is to the south from a low ridge at the northeast extent of the Eagle Mountains, at the north end of Chuckwalla Valley. The view captures a majority of the northern Chuckwalla Valley backdropped by the rugged, horizontal form of the Chuckwalla Mountains and Wilderness. As shown in Figure 4.19-1B, the DHSP would result in the introduction of barely discernible built structures that, at an approximately eight-mile viewing distance, would appear as a low, narrow, light-colored, horizontal band along the valley floor (for the solar farm), and faintly visible, vertical structural elements (for the transmission line). Neither the solar farm nor the transmission line structures would be perceived as prominent features in the landscape when viewed from the more distant, lower elevation viewpoints within Joshua Tree Wilderness (and Joshua Tree National Park). View impairment of the valley floor or other background landforms and natural features would be minimal. Although the view from this and similar distant view locations would be static, offering extended view durations, these views also have the potential to be partially obscured by poor atmospheric conditions, such as haze.

At this background viewing distance, the fairly indistinct low horizontal form and line of the solar farm and the vertical forms and lines of the transmission poles would result in a low degree of visual contrast relative to the natural features of the existing landscape. The most notable characteristic of the development is the color contrast resulting from the reflection of light off the solar farm structural support elements (from this viewing angle, the solar panels would be tilted toward the south, away from this viewpoint) and the lighter color of the graded soils. Overall visual contrast would be low. The DHSP features, while visible at this distance, would appear sufficiently small in scale relative to the panoramic landscape context, such that they would be perceived as subordinate features in the landscape. Similarly, the apparent small scale of the project structures at this viewing distance would seem to block from view a minimal extent of the background landscape (valley floor). Thus, view blockage caused by the DHSP would be low. The resulting overall visual change caused by the DHSP would be low, and would not substantially degrade the existing visual character or quality of the landscape as viewed from KOP 1 and other similar more distant, lower elevation vantage points in Joshua Tree Wilderness and Joshua Tree National Park. Although the resulting visual effect would be adverse, it is anticipated that the apparent color contrast of the facilities and graded surfaces can be further reduced through effective implementation of Mitigation Measures VR-2, VR-3, and VR-4.

The view from KOP 2 in the Coxcomb Mountains within Joshua Tree Wilderness is to the southwest from an elevated vantage point overlooking the predominantly natural appearing northern portion of Chuckwalla Valley, backdropped by the rugged, horizontal to angular forms of the Chuckwalla Mountains and Wilderness (to the south and southwest) and Eagle Mountains (to the west). As shown in Figure 4.19-1B, the DHSP would result in the introduction of a large-scale complex of built structures and graded surfaces forming a spatially and visually prominent

series of geometric patterns on the valley floor, that would contrast with the predominantly natural appearance of the northern Chuckwalla Valley landscape and background mountains. The color and reflective characteristics of the panel support structures would contribute to the noticeable contrast with the existing earthtone colors (similar to KOP 1, from this viewing angle, the solar panels would be tilted toward the south, away from this viewpoint). Less distinct would be the faintly visible sequence of vertical transmission structures traversing the valley floor west and south of the solar farm.

The industrial patterns and color of the solar farm, combined with the graded land surfaces and resulting hard lines of the vegetation demarcations would result in strong line contrast with the naturally irregular landform and vegetative lines of the existing landscape. The resulting gray color and slightly reflective metallic surfaces combined with the extensive light-colored graded soil surfaces would contrast moderately to strongly with the darker grey-greens, tans and reddish hues of the foreground to middleground landscape. The resulting overall visual contrast would be moderate-to-high. The spatially prominent location of the solar farm in the central portion of the panoramic views of the Chuckwalla Valley, along with the large scale of the project, which would span a substantial portion of the valley, contribute to the DHSP's overall co-dominance (equally dominant) relative to the flat valley floor and angular mountains. The large areal coverage of the project effectively blocks from view a substantial portion of the valley floor, resulting in a moderate degree of view blockage.

The overall visual change that would result from the equally weighted contributing factors of project-induced visual contrast, project dominance, and view blockage would be moderate, which would cause a substantial effect on the scenic vista available from this and other elevated vantage points within Joshua Tree Wilderness and substantially degrade the existing visual character or quality of the site and its surrounding landscape. However, the resulting overall moderate-to-high level of change would be allowed under the applicable Interim VRM Class IV management objective. Even though the resulting visual effect would be substantial and adverse, it is anticipated that the apparent color contrast of the facilities and graded surfaces can be reduced through effective implementation of Mitigation Measures VR-2, VR-3, VR-4, and VR-5.

Indirect Effects

Indirect visual effects will be the visible increase in traffic on roadways beyond the immediate project vicinity during construction. Although there would be an increase in vehicle trips on regional roads associated with construction related vehicles, it is not expected that, in the context of existing non-project related traffic, the increased traffic would be noticed by the casual observer in Joshua Tree National Park. The resulting visual effect would not be substantial.

Cumulative Effects

The 11 local foreseeable cumulative energy projects would exhibit complex industrial characteristics and structural visual contrast (form, line, color, and texture) similar to the DHSP (though there will be some differences depending on the type of project and viewing location). An example is provided for the cumulative effect of the DHSP and the Desert Sunlight Solar Farm project, which is the closest cumulative project and is located immediately adjacent and to the north of the proposed project. Figure 4.19-2A presents the existing view of the northern Chuckwalla Valley from KOP 2 on the western flank of the Coxcomb Mountains. This elevated viewpoint

provides an elevated perspective of the valley north of I-10. Figure 4.19-2B presents a simulation of the DHSP, which is located approximately 3.5 miles to the southwest. The proposed solar farm, with the solar panel arrays facing (tilted) to the south, away from the viewer at KOP 2, would appear as a spatially prominent and central series of geometric patterns on the basin floor and would contrast with the predominantly natural appearance of the northern Chuckwalla Valley landscape. Figure 4.19-2C presents a cumulative simulation of the DHSP with the Desert Sunlight solar project, at a viewing distance of 2.5 to 3.5 miles to the southwest. Again, the view is toward the back of the solar field with the solar panels facing toward the south, away from the KOP 2 viewing location. As shown in the simulation, the cumulative visual effect of the two projects would be substantially greater with a larger portion of the valley being converted from a natural desert valley landscape to that of an industrial energy complex that appears, at this viewing distance, as a spatially prominent series of geometric patterns that do not replicate the form, line, color, or texture of the existing desert landscape.

Air Quality

Direct Effects

As explained in Section 3.2, Air Resources, the Class I area closest to the project is the Joshua Tree National Park. Visibility is considered an important air quality value to be protected within Joshua Tree National Park. Since the nearest boundary of the Joshua Tree National Park is 1.8 miles from the project site, airborne dust generated at the project site could be visible during construction from within the park, especially because low humidity provides clear vistas and relatively low haze. Construction activities would not require use of any major stationary sources that could permanently affect regional air quality or visibility at the Class I area, and the sources of emissions during construction would occur near the ground level where dust would have a limited ability to notably affect distant vistas.

Precursors to haze would also be intermittently released near ground level by construction equipment exhaust. Because of the diffuse and intermittent nature of construction sources, the emissions would be widely dispersed across the project site, and concentrations near the Joshua Tree National Park would be greatly reduced and much lower than the localized effects near the project site.

Emissions during construction of the project would occur primarily during daytime hours and would be controlled to avoid visible plumes as required by SCAQMD Rule 403. Airborne dust generated by wind erosion would be greatly reduced in concentration over nighttime hours when construction activity ceases for the day. Construction activity would be phased across the solar project site over a 2-year period, limiting the amount of disturbed area that could produce fugitive dust from wind erosion at any one time. In addition, Mitigation Measures MM AIR-1 (Fugitive Dust Control Plan) and MM AIR-2 (Control On-Site Emissions) would be implemented to reduce dust and equipment exhaust emissions to the extent feasible. These emissions control requirements ensure that development of the project would result in only a small and temporary increase in wind erosion potential or visibility reduction compared to natural conditions. Consequently, construction of the project with dust controlled to avoid visible plumes as required by SCAQMD Rule 403 would not produce an adverse effect to vistas or in night sky visibility.

Indirect Effects

There would be no indirect effects associated with the project during construction. The electricity produced by the project would displace electricity generated from other power plants, which would avoid the need for their operation. However, the exact nature and location of any changes in criteria air pollutant emission rates is not known and would not likely occur near the Joshua Tree National Park or Joshua Tree Wilderness Area.

Cumulative Effects

As described above, the nearest federal Class I area, Joshua Tree National Park, is located approximately 1.8 miles away from the project site. It is expected that cumulative PM10 and PM2.5 emissions would result in a temporary unavoidable adverse effects during construction, consequently effects on visibility due to airborne dust would likely be adverse. However, the sources of emissions during construction would occur near the ground level, where dust would have a limited ability to notably affect distant vistas, and emissions would be widely dispersed across the project site. The diffuse and intermittent nature of construction sources ensures that the concentration near the Joshua Tree National Park would be greatly reduced and much lower than the localized effects near the project site. Additionally, all cumulative projects are anticipated to avoid visible plumes as required by SCAQMD Rule 403 and implement additional mitigation measures where needed to control dust emissions. Therefore, the DHSP and other cumulative projects would not result in an adverse cumulative effect on visibility.

Noise

Direct Effects

As indicated in Subsection 4.12.6, noise from construction activity would generally be audible at locations less than a half mile from the proposed project site. Operational activities at the project site would generate minimal noise. During operations, there would be 3 to 8 operations and maintenance workers on the project site, on an as-needed basis. There would be limited amounts of vehicle traffic on the site, but this vehicle activity would be intermittent, and would not be expected to generate off-site adverse noise effects. It is unlikely that noise levels associated with construction or operations of the project would be audible at Joshua Tree National Park, which is located approximately 1.8 miles (9,400 feet) to the northeast of the solar field site. Therefore, project construction and operational activities would not result in adverse noise-related effects on users of Joshua Tree National Park. A detailed discussion of the noise-related effects that would be associated with the project are presented in Section 4.12 (Noise and Vibration).

Indirect Effects

There would be no indirect noise-related effects associated with the project.

Cumulative Effects

Cumulative noise or vibration effects would occur if multiple projects would happen in the same geographic areas at the same time or when sequential projects extend the duration of noise or vibration effects on a given area over a longer period of time. Current ambient noise conditions represent the cumulative effect of noise generation on a local geographic scale. Except for the I-10 vicinity, existing noise levels in the immediate project vicinity are generally low. There are

no known existing ground vibration issues in the project study area. Cumulative noise effects may result in combination with the Desert Sunlight Solar Farm project, located immediately adjacent to and north of the solar field site; the Silverado Power Solar Project, located one mile south of the solar field site; as well as the Desert Center II Solar Project and the Chuckwalla Solar I Project, both of which would be traversed by the gen-tie line under Alternatives D and/or E.

The Silverado Power Solar Project is not anticipated to begin until mid-2014 and therefore, construction activities would not occur at the same time as the DHSP. Alternatively, construction of the Desert Sunlight Solar Farm Project began in September 2011 with full commercial operation expected by the first quarter of 2015 (First Solar 2011). This schedule coincides with the proposed DHSP construction schedule. The timing for approval and construction of the Desert Center II Solar and Chuckwalla Solar I Projects are not known, but could potentially overlap with part of the construction period for the DHSP. However, it would be expected that no adverse cumulative noise effects on Joshua Tree National Park would result from construction or operational activities for the following reasons: 1) the geographic extent of stationary construction-related noise issues would be limited to distances of 2,500 feet, or less; 2) the geographic extent of potential ground vibration effect would be limited to a distance of a few hundred feet from the source of the vibrations; and 3) the relatively long distance from Joshua Tree National Park to the project sites.

Wildlife

Direct Effects

There would be no direct effects to wildlife within the Joshua Tree National Park and Joshua Tree Wilderness as construction and operation of the project would occur outside of Park or Wilderness area boundaries.

Indirect Effects

The development of the project site would result in a permanent conversion of desert habitat to industrial/commercial uses within the NECO planning area, which includes the Joshua Tree National Park and the Joshua Tree Wilderness area. The loss of intermountain and foraging habitat would have indirect effects to the long-term viability of wildlife that are found in or use the surrounding National Parks and Wilderness areas.

For many species such as bighorn sheep, burro deer, and Yuma mountain lion, intermountain movements provide a genetic connection within a larger metapopulation and are the source of colonization of vacant habitat. Intermountain areas of the desert floor that these species traverse between mountain ranges are as important to the long-term viability of populations as are the mountain ranges themselves. Actions that impair the ability of bighorn sheep, burro deer, and mountain lions to move between mountain ranges include fencing along highways or other boundaries, canals, and high densities of human habitation. These will limit the potential for natural colonization and gene exchange, both of which are key to metapopulation viability. Proposed exclusion fencing surrounding the DHSP could affect the movement of wildlife between the Eagle Mountains and Coxcomb Mountains and the Joshua Tree National Park/Bighorn Sheep WHMA.

The introduction of nonnative, invasive weeds could also indirectly affect habitat for wildlife in the Joshua Tree National Park and Joshua Tree Wilderness area, including the state and federally listed desert tortoise, if project activities resulted in the establishment and/or spread of weeds through the region. The effects of weeds on wildlife are detailed in Section 4.4 (Biological Resources – Wildlife), and include displacement of native plants that are important to herbivorous species, increased threat of wildfire, and altered habitat structure and ecological function of wetland, riparian, and desert wash communities.

Golden eagle nesting territories in the Eagle and Coxcomb mountains are within or adjacent to JTNP and adverse effects to these nesting territories would therefore affect JTNP biological resources. Prairie falcon has not been reported in the project area, but would be expected to nest in the surrounding mountains, including the mountains within JTNP, and to forage over the project site at any time of year. Adverse effects to any nesting territories based within JTNP would affect JTNP biological resources. Project construction is not expected to cause substantial direct disturbance (e.g., noise, lighting, visual disturbance) to nest sites in the local nesting territories, due to their distance from the site. However, implementation of Mitigation Measure MM WIL-5 (Golden Eagle Pre-construction and Construction Phase Surveys) requires annual monitoring of golden eagles during nesting season, and requires the project Owner to prepare and implement an adaptive management plan if golden eagles are found nesting in the area at any time during project construction. Additionally, Mitigation Measure MM WIL-6 (Bird and Bat Conservation Strategy) would require the project Owner to prepare and implement an overall strategy to avoid, minimize, or mitigate project impacts to birds and bats, including golden eagles and prairie falcons, in consultation with the USFWS.

Increases in the number of common ravens in the region due to subsidies at the project site could have a long-term effect on the desert tortoise population by reducing juvenile tortoise survivorship (Boarman et al. 2006; Boarman 2003). The population-level consequences of this effect may not be apparent for years because tortoises do not typically reach sexual maturity until 15 to 20 years of age. Due to the solar facility site's proximity to JTNP, the project's predator subsidy effects could extend to desert tortoise and other wildlife populations within the Park.

These indirect effects to wildlife would be reduced by implementation of the Habitat Compensation Plan and Integrated Weed Management Plan required in Applicant Measures BIO 1 and BIO-2 and Mitigation Measures VEG-6 and VEG-7. Mitigation Measures WIL-5 and WIL-6 would reduce impacts to golden eagles and other raptors in JTNP. Additionally, impacts related to an increase in ravens would be reduced or eliminated by the implementation of Mitigation Measure WIL-8.

Cumulative Effects

Land use in the cumulative analysis area has been historically altered by human activities, resulting in conversion of undeveloped land and habitat loss, fragmentation, and degradation. Reasonably foreseeable future projects that could affect biological resources in the cumulative effects area characterize overall development trends in the Chuckwalla Valley as well as in the larger NECO planning area. Ongoing development in the area is dominated by renewable energy development. In addition to large-scale land conversion to industrial uses at a project site, major renewable projects require extensive access roads and new transmission lines to tie into the existing electrical grid system. Other projects in the cumulative study area include non-

renewable energy, transmission lines, wind power, and solar power projects as well as commercial and residential developments, reconstruction projects, a pumped storage project, an auto racetrack, a landfill, and a communication project (see Tables 3.16-2 and 3.16-3). In consideration of the existing and future development in the region, the project would contribute to adverse cumulative effects on wildlife movement between the Park and Wilderness areas and foraging habitat potentially used by wildlife within Joshua Tree National Park and Joshua Tree Wilderness Area.

The incremental direct and indirect effects to wildlife movement and foraging habitat would be reduced with the implementation of the Habitat Compensation Plan and Integrated Weed Management Plan required in Applicant Measures BIO-1 and BIO-2 and Mitigation Measures VEG-6 and VEG-7. These measures would ensure that habitat loss of these areas is adequately compensated for and equivalent habitat would be protected offsite. However, even with the implementation of mitigation, cumulative effects to wildlife would be adverse because of the rapid and large-scale development in the region, particularly related to utility scale renewable energy projects.

Dark Skies

Direct Effects

Of particular concern is the DHSP's potential effect on the Dark Sky resource that Joshua Tree National Park is known for throughout the National Park System. It is estimated that only approximately 10 percent of the population of the United States is able to see the night sky in its natural, unpolluted state. Joshua Tree National Park is noted for initiating partnerships with surrounding communities in an effort to limit light from spilling over park boundaries. To serve this increasing public interest, Joshua Tree National Park offers a variety of Night Sky programs. In the immediate project region, Dark Sky visitors access the east end of the Pinto Basin at the access gate adjacent to KOP 1 in the Eagle Mountains. Because any light source in the desert contributes to ambient light pollution and all light sources are adversely cumulative in terms of the effect on human darkness adaptation and the dwindling availability of Dark Sky observation areas, it is essential that substantial steps be taken to insure that additional night sky light pollution does not occur from implementation of the proposed project. To accomplish this, effective implementation of Mitigation Measure VR-6, which would reduce adverse visual effects associated with night lighting by requiring strict lighting specifications and controls and operating parameters, would be essential.

Indirect Effects

There would be no indirect dark sky-related effects associated with the project.

Cumulative Effects

As described above for Dark Skies Direct Impacts, as all light sources are adversely cumulative in terms of the effect on human darkness adaptation and the availability of Dark Sky observation areas, the 11 local foreseeable cumulative energy projects contributes to ambient light pollution in a manner similar to the DHSP (though there will be some differences depending on the type of project). To insure that additional night sky light pollution does not occur from implementation of the DHSP, implementation of Mitigation Measure VR-6 would be essential.

Water

Direct Effects

As described in Section 3.20, the proposed DHSP site is located within the Colorado River Hydrologic Unit and overlies the Chuckwalla Valley Groundwater Basin (CVGB), which has a surface recharge area of 940 square miles. Joshua Tree National Park is also within the Colorado River Hydrologic Unit, but overlies the Joshua Tree Groundwater Basin, which has a surface recharge area of 53.8 square miles. As described in Section 4.20, construction water requirements of the proposed DHSP are substantially more than operational water requirements; however, the safe yield estimate for the CVGB presented in Table 3.20-2 (Estimated Budget for the Chuckwalla Valley Groundwater Basin) indicates that sufficient water supply is available within the CVGB to meet the project's water requirements. In addition, the Water Supply Assessment (WSA) presented as Appendix E determines that although overdraft conditions should be anticipated to occur in the CVGB over the lifetime of the proposed DHSP, such conditions would be temporary and would recover. Furthermore, mitigation identified in Section 4.20 would require use of an alternative water source for the project or water conservation measures during projected overdraft years in the CVGB (Mitigation Measure WAT-2, Alternative Water Source), thereby avoiding potential adverse effects associated with local groundwater and water supply reliability. As described in Section 4.20, water use and drainage pattern alterations on the project site would be largely site-specific, and would be minimized or avoided through the implementation of mitigation measures. Potential drainage pattern alterations or other surface water effects on the proposed DHSP site would not affect Joshua Tree National Park. A detailed discussion of the water-related effects that would be associated with the project are presented in Section 4.20, Water Resources.

Indirect Effects

Groundwater pumping associated with construction of the DHSP could potentially decrease outflow from the CVGB to hydrologically connected groundwater basin(s), resulting in decreased water availability in the affected basin(s). Groundwater flow direction is generally from the northwest to the southeast, while the Joshua Tree Groundwater Basin is located to the north. Therefore, if the project were to result in this type of indirect effect, it would not be likely to affect the Joshua Tree Groundwater Basin or the overlying Joshua Tree National Park.

Cumulative Effects

An estimated cumulative groundwater budget for the CVGB is presented in Table 4.20-4, and indicates that the CVGB could be affected by overdraft conditions between approximately 2014 and 2025, returning to a positive groundwater balance once water demand associated with cumulative projects is reduced (after 2025). The WSA also includes consideration of the cumulative groundwater budget for the CVGB, and determines that although overdraft conditions could develop in the CVGB during implementation of the DHSP and other reasonably foreseeable projects in the area, such conditions would be temporary, and the DHSP's contribution to such conditions would be minimized through implementation of mitigation measures. Potential effects of the project to surface water resources would be relatively site-specific and would not have the potential to result in cumulative effects on Joshua Tree National Park. The proposed DHSP would not result in cumulative effects that would have the potential to affect surface water or groundwater resources in Joshua Tree National Park.

Recreation

Direct Effects

There would be no direct effects to recreation within the Joshua Tree National Park and Joshua Tree Wilderness Area as construction and operation of the project would occur outside of Park or Wilderness area boundaries.

Indirect Effects

Eliminating recreational use of the DHSP site could result in some minimal increase of recreational use outside the project boundary. In addition, the proposed solar facility would result in a temporary increase in population due to the influx of construction workers, although use of these Joshua Tree National Park or the Joshua Tree Wilderness Area by temporary construction workers is not expected to affect recreational use of these areas by the general public, as construction worker use is expected to be minimal.

Because construction of the project would alter the existing character of the project study area, it may result in a substantial adverse effect on the wilderness experience of dispersed and occasional visitors to the Joshua Tree Wilderness Area, located 1.8 miles from the solar facility boundary at its nearest point. Noise effects would not occur due to the distance between the Joshua Tree Wilderness Area and the project site. These issues are addressed in detail in Sections 4.19 (Visual Resources) and 4.12 (Noise), respectively. While the construction of the project is not expected to reduce visitation to the Wilderness Area, it is expected to substantially diminish the wilderness experience in proximal locations within the Coxcomb Mountains throughout the duration of construction.

Additionally, while the visual effects of operation and the long term presence of the project would be substantially reduced compared with construction, the effects would be ongoing for 30 years, permanently diminishing the wilderness experience to dispersed recreational visitors to the Joshua Tree Wilderness Area.

Cumulative Effects

The project would alter the existing character of the project study area, and it may result in a substantial adverse effect on the wilderness experience of dispersed and occasional visitors to the Joshua Tree Wilderness Area. Three of the energy projects in Table 4.1-2 are as near or nearer to the Joshua Tree Wilderness Area, including the Desert Sunlight Solar Project, Eagle Mountain Wind Project Met Towers, and Eagle Mountain Pumped Storage Project. These projects would result in noise and visual effects on the Joshua Tree Wilderness Area. While the construction of the projects is not expected to reduce visitation to the Wilderness Area, it is expected to substantially diminish the wilderness experience in proximal locations within the Coxcomb Mountains throughout the duration of construction, operation, and decommissioning of the cumulative projects.

Construction Workforce

Direct Effects

There would be no direct effects from project construction workers to Joshua Tree National Park and Joshua Tree Wilderness resources as construction and operation of the project would occur outside of Park or Wilderness area boundaries.

Indirect Effects

The NPS has potential concerns that project construction workers might choose to camp within Joshua Tree National Park either at NPS-designated campsites or informally and commute daily to work at the proposed project site.

Any effects associated with construction workers for the project would be temporary and indirect. The majority of the project construction workforce would be Riverside County residents. The total project construction workforce is expected to average approximately 130 craft workers over the 27-month proposed project construction period, with a peak on-site craft workforce of approximately 315 craft workers.

Research shows that construction workers would commute as much as two hours each direction from their communities rather than relocate (BLM and CEC 2009) and the Applicant has indicated that the labor force for the proposed project would be derived from Riverside County to the extent possible. The socioeconomic information and analysis in Sections 3.15 (Social and Economic Setting) and 4.15 (Social and Economic Setting) determine that there are more than sufficient unemployed Riverside County residents to meet the project's construction workers needs. Consequently, it is expected that minimal population in-migration would occur as a result of the project construction.

Similarly, it also is unlikely that the construction workforce would require housing in excess of the existing supply. Based on the data and analysis in Section 3.15 (Social and Economic Setting) and 4.15 (Social and Economic Setting), any in-migration by the construction workforce could be accommodated by the available hotel rooms and housing vacancies in the nearby cities of Blythe and Indio, which have approximately 35 lodging facilities with an average of 55 rooms per facility.

Most of the Joshua Tree National Park campgrounds are located in the northwest area of the park and are too great a distance for project construction workers to commute from on a daily basis. Only the Cottonwood Campground is readily accessible from I-10. The campground has 62 individual sites available on a first-come first-served basis year round. There are also three group sites that can be reserved. There is a 30-day camping limit each year for park visitors (of which at most 14 nights total may occur from October through May). The Cottonwood Campground would likely be 45 minutes to an hour's drive from the project site. The campground has basic camping amenities, including water and a dump station for RVs, but no shower facilities or utility hook-ups are available. Consequently, the campground would likely have limited attraction as overnight accommodations for project workers.

Informal camping by construction workers could be an issue in the eastern Joshua Tree National Park areas that are closer to the project site and less frequented by other park visitors or park rangers. These areas are remote and do not provide any long-term support facilities or amenities.

Informal camping by construction workers might still occur, but would likely be infrequent and short in duration, resulting in a minor effect on the NPS camping facilities and natural resources.

Cumulative Effects

Depending on their locations, other solar projects near the Joshua Tree National Park may cause effects similar to those of the proposed project. However, the other solar projects are of equal or greater distance from Joshua Tree National Park and therefore would be expected to have an equal or lesser effect (on a per worker basis) on park resources. As discussed in Section 4.15 (Social and Economic Setting), there will be a sufficient number of employable Riverside County residents to meet the projects' cumulative construction workforce needs. It is therefore expected that minimal population in-migration would occur as a result of the construction of the currently foreseen solar construction projects in Riverside County. Furthermore, there are substantial housing and overnight accommodations available in the region to meet any demand for project workers to temporarily relocate closer to their project site. Consequently, there would be a minor cumulative effect on NPS camping facilities and natural resources from construction workers.

Mitigation Measures

The Record of Decision or Right-of-Way Grant stipulations will recognize an Interagency Agreement between the BLM and NPS. This Interagency Agreement will establish roles and responsibilities, and the agencies will work cooperatively with the project owner to develop an Environmental and Construction Monitoring and Compliance Program (ECMCP). The NPS will significantly contribute to the development of detailed criteria in the lighting, dust control, and noise mitigation and monitoring for the project.

MM SD-1 **The NPS reviews and comments on pre-construction plans.** The NPS shall be afforded the opportunity to review and comment on the following pre-construction plans required for the project prior to approval of the plans by the BLM: the Vegetation Resources Management Plan, the Fugitive Dust Control Plan, the Integrated Weed Management Plan, Night Lighting Management Plan, and the Construction Traffic Control Plan**.** Review and comment by the NPS must be within time frames specified by the BLM.

MM SD-2 **Project owner enters into a funding agreement.** The project owner shall enter into a funding agreement or other financial mechanism, as may be specified in the Record of Decision or Right-of-Way Grant, to reimburse the NPS for reasonable costs incurred in the monitoring of the following measures (whether project owner-proposed or BLM-required) to address temporary indirect impacts on the Joshua Tree National Park:

- Fugitive dust: MM AIR-1, and MM VR-1, concerning the development and implementation of a dust control plan that includes the use of dust palliatives to ensure compliance with SCAQMD Rule 403; MM AIR-3, requiring control of fugitive dust on unpaved roads on the DHSP site; and AM-GEO-2, as it relates to the suppression of fugitive dust during construction and operation.
- Noise: MM NOI-1, limiting construction activity to daytime hours near occupied residences.

- Nighttime lighting: MM VR-6, requiring the design and installation of a night lighting management plan concerning temporary and permanent exterior lighting.

MM SD-3 **The project owner develops a Signage and Guidance Plan.** A Signage and Guidance Plan shall be developed for Joshua Tree National Park by the project owner and reviewed and approved by both the NPS and the BLM prior to the start of construction of the project. The intent of this plan is to address the potential indirect effects on NPS land as a result of the influx of workers associated with the mobilization, construction, and demobilization of the project. The plan shall include the following elements:

- Design and installation of directional and informational signage that identify areas of Joshua Tree National Park available for day, overnight, and long-term stays; off-limit areas; and pertinent park rules and regulations;
- Design and installation of strategically placed gates, bollards, or the like, inside the boundary of Joshua Tree National Park, where deemed necessary, for the purpose of vehicular control on NPS parkland located nearest the project boundary;
- Educational instruction for project construction workers on park rules and regulations pertinent to Joshua Tree National Park and Joshua Tree Wilderness Area. This instruction shall be integrated into the Worker Environmental Awareness Program;
- Requirements for the retention and/or removal of any items installed as part of the plan following completion of construction of the project; and,
- Funding mechanism for implementing the plan.

Items installed as part of the plan shall have a nexus to the NPS's need to address the likely impacts associated with above normal numbers of users of Joshua Tree National Park facilities during the mobilization, construction, and demobilization period of the project.

4.17.16 Cumulative Effects

Geographic Scope

Since the project would impact the Joshua Tree, Chuckwalla Mountains and Palen-McCoy Wilderness Areas, the geographic extent of analysis is the area encompassing the northern boundary of the Joshua Tree Wilderness Area south to the southern boundary of the Chuckwalla Mountains Wilderness Area. The eastern and western boundaries would also be determined by the Wilderness Area boundaries. The Alligator Rock ACEC is included in this geographic extent. To a lesser extent, Palen-McCoy Wilderness, since it would be within the viewshed of the project study area is also considered within this analysis.

Table 4.17-1. Cumulative Projects within the Geographic Scope of Cumulative Analysis

Resource Area / BLM Program Area	Geographic Area of Consideration	Elements to Consider	BLM Authorized and Other Known County Projects/Actions/Activities
Special Designations	Northern boundary of the Joshua Tree Wilderness Area south to the southern boundary of the Chuckwalla Mountains Wilderness Area. Eastern and western boundaries would also be determined by the Wilderness Area boundaries	Impacts to lands under special designation	• Interstate 10 • Devers-Palo Verde No. 1 Transmission Line • West-wide Section 368 Energy Corridors • BLM Recreational Opportunities • Blythe Energy Project Transmission Line • Chuckwalla Valley Raceway • Desert Sunlight Solar Farm Project • Silverado Power Solar Project • Devers-Palo Verde No. 2 Transmission Line • Desert Southwest Transmission Line • Sol Orchard • SCE Red Bluff Substation

Cumulative Effects Analysis

Existing Cumulative Conditions

The Joshua Tree, Chuckwalla, and Palen-McCoy Wilderness Areas are surrounded by largely undeveloped lands. The Alligator Rock ACEC is also largely undeveloped, though it is nearly adjacent to I-10. Devers–Palo Verde No. 1 transmission line has been built through the Alligator Rock ACEC and the Desert Sunlight Solar Farm is under construction north of the proposed project site.

Past, Present and Reasonably Foreseeable Future Projects

Devers–Palo Verde No. 1 and Blythe Energy Project Transmission Line are existing projects that currently passes through the Alligator Rock ACEC and the Desert Sunlight Solar Facility is currently under construction immediately adjacent to the north of the proposed project site. The Desert Sunlight gen-tie would be constructed along Kaiser Road. The Chuckwalla Valley Raceway is located three miles north of the Alligator Rock ACEC. DPV2 transmission line is a proposed future project that would also pass through the Alligator Rock ACEC. These projects may contribute to the impacts of Alternatives 4, through 7 and C through E to result in cumulative impacts to the ACEC, the Chuckwalla Desert DWMA, and the Palen-Ford WHMA. The temporary impacts from the proposed project or Alternatives 5, 5, and C through E in conjunction with the future Devers–Palo Verde No. 2 and Desert Sunlight projects could cause cumulative impacts to the viewshed of the Chuckwalla Wilderness Areas and the Alligator Rock ACEC by adding a second transmission line adjacent to the existing line. No other known projects have been proposed within the Alligator Rock ACEC, Joshua Tree, Chuckwalla Mountains or Palen-McCoy Wilderness Areas.

Similar to the effects described in Section 4.17.15 above, other projects, such as the Silverado Power Solar Project, in close proximity to the Joshua Tree Wilderness Area and Chuckwalla Mountains Wilderness Area may cause similar impacts compared to the proposed project.

Because construction and project development would not occur under the No Action and No Project Alternatives (Alternatives 1, 2, 3, and A), these alternatives would not contribute to cumulative effects. Alternative B would not contribute to cumulative effects, as the cumulative scenario assumes concurrent construction of the Desert Sunlight approved gen-tie and Alternative B conductor stringing using the same crew at the same time, with no additional work required for Alternative B beyond what is required for the Desert Sunlight gen-tie.

4.17.17 CEQA Considerations

Appendix G of the State CEQA Guidelines does not provide significance criteria for special designations, except those stated for agriculture and forestry resources (addressed under Section 4.11, Lands and Realty). No significance determination has been made.

4.18 TRANSPORTATION AND PUBLIC ACCESS

This section describes effects on transportation and public access that would be caused by implementation of the proposed project. The following discussion identifies and analyzes environmental impacts, and describes measures to reduce or avoid adverse impacts anticipated from project construction and operation. In addition, existing laws and regulations relevant to transportation and circulation are described. In some cases, compliance with these existing laws and regulations would serve to reduce or avoid certain impacts that might otherwise occur with the implementation of the project. An analysis of cumulative effects from other past, present and reasonably foreseeable projects related to transportation and circulation is also included in Section 4.18.15.

4.18.1 Methodology for Analysis

Baseline conditions for the effects analysis presented in this section were established in Section 3.18. To evaluate effects related to transportation and public access within the project study area, a quantitative traffic study was completed for the project by Hernandez, Kroone and Associates (HKA 2011), using methods based on the Highway Capacity Manual. The traffic study follows the outline in the Riverside County Transportation Department "Traffic Impact Analysis Preparation Guide", dated April 2008. The traffic study is included in this document as Appendix H.

Effects to the transportation network were identified based on the predicted interaction among construction, operation, and decommissioning of the project or an alternative and the baseline environmental setting described in Section 3.18. Generally there are two times when the existing traffic volume is highest: between 6:00 AM and 9:00 AM and between 4:00 PM and 6:00 PM on a normal week day. The impacts of the traffic are studied for the peak one hour period during each of those two periods. The analysis presented below estimates the project trips of concern for both the AM and PM Peak Periods.

Traffic operations were quantified through the determination of Level of Service (LOS), which is a qualitative measure of traffic operating conditions, whereby a letter grade "A" through "F" is assigned to an intersection or roadway segment, representing progressively worsening traffic operations. Levels of Service were calculated for the study intersections using methods documented in the Transportation Research Board (TRB) Publication *Highway Capacity Manual, Fourth Edition, 2000* (HCM 2000). A LOS of A means that the intersection has little delay. A LOS of F means the intersection has delays of over a minute for signalized intersections.

In the County of Riverside, Circulation Element Policy C2.1 states the County should maintain a countywide target level of service (LOS) of LOS "C" along all County maintained roads and conventional state highways. As such, if the LOS decreases to below an LOS of C with the addition of the traffic generated by the proposed project (project traffic), it is considered to have an impact and mitigation may be required. Intersections under joint jurisdiction with Caltrans may operate at an LOS of E.

Because no traffic would be generated as a result of any of the two No Project Alternatives (Alternative 1 and Alternative 2 as described in Section 2), the quantitative traffic analysis described in this section is only relevant to the Action Alternatives (Alternatives 4 through 6 as described in Section 2).

Transportation and public access effects were considered for the project's potential to: exceed Level of Service (LOS) standards along roadway segments or intersections; conflict with air travel, restrict or disrupt rail service, restrict or disrupt access to the proposed project site or nearby land uses (including movement of emergency vehicles), restrict or disrupt public transportation, result in substantial damage to area roadways, or conflict with applicable plans.

The County of Riverside General Plan and the County of Riverside Congestion Management Plan were reviewed to evaluate the potential for project traffic to conflict with applicable plans, ordinances, policies, and congestion management programs presented therein.

4.18.2 Applicant Measures

The following Applicant Measures (AMs) have been incorporated as design features of the proposed project (and all action alternatives) and shall be implemented to reduce adverse impacts associated with the project. In some cases, mitigation measures further clarify or expand on AM reporting requirements, timing of implementation, or other details where appropriate. Where there is a conflict between provisions of the mitigation measures imposed and the following AMs, the mitigation measures take precedence.

AM TR-1 **Construction Traffic Control Plan.** The project Applicant will prepare a Construction Traffic Control Plan in conjunction with Riverside County or Caltrans in accordance with Caltrans Manual on Uniform Traffic Control Devices and the California Joint Utility Traffic Control Manual (2010).

AM TR-2 **Document road conditions.** The project Applicant will document road conditions at the beginning and end of project construction and decommissioning and contribute fair share cost for pavement maintenance and other needed repairs.

AM TR-3 **Share project information with airport owners.** The project Applicant will share project information with the airport owners if a transmission line alternative that runs near the former Desert Center Airport's runway is selected to assure that no special precautions are needed.

AM TR-4 **Coordinate with DoD.** The BLM will coordinate with the Department of Defense R 2508 Complex Sustainability Office, Region IX, based in San Diego, California, and with local regional military installations regarding low-level flight operations relative to the project to assure that no special precautions are needed.

4.18.3 Alternative 1 – No Action (No Plan Amendment)

Under Alternative 1, the proposed Desert Harvest Solar Project (DHSP) would not be approved by the BLM, and BLM would not amend the CDCA Plan. As a result, no solar energy project would be constructed on the project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no ground disturbance. As a result, impacts would not occur.

4.18.4 Alternative 2 – No Project Alternative (with Plan Amendment to Find the Site Suitable for Solar Energy Development)

Under Alternative 2, the proposed DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site available for future solar energy development. As a result, the DHSP would not be constructed on the project site, and BLM would manage the site consistent with the amended land use designation in the CDCA Plan. No impacts from the DHSP would occur.

4.18.5 Alternative 3 – No Project Alternative (with Plan Amendment to Find the Site Unsuitable for Solar Energy Development)

Under Alternative 3, the DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site unavailable for future solar energy development. As a result, the DHSP would not be constructed on the project site and BLM would manage the site consistent with the amended land use designation in the CDCA Land Use Plan. No impacts from the DHSP would occur.

4.18.6 Alternative 4 – Proposed Solar Project

The projected future traffic volume in the area provides context against which to measure the impact of project-generated traffic. As discussed in Appendix H several growth measurements were analyzed to determine which one provided the best method to estimate future traffic in the project area and a three percent annual growth rate was determined to be appropriate for use in the traffic analysis.

Project trips represent the volume of traffic that would be added to the road system by implementation of the proposed project. Project trips include employees commuting to and from the proposed project site, construction equipment trips, and deliveries of materials to the proposed project site.

The number of project trips would be the same or similar regardless of which action alternative is chosen. Therefore, the project trips were not estimated separately for each alternative and the traffic analysis was performed using a single dataset.

The only project trips relevant to the quantitative traffic analysis are those that occur during the AM and PM peak traffic hours. Because traffic volume would likely be greatest during these hours, analyzing these periods provides a conservative assessment of overall traffic impacts. The AM peak traffic hour occurs during the period from 6:00 AM to 9:00 AM and the PM peak traffic hour occurs during the period from 4:00 PM to 6:00 PM (HKA 2011). Traffic impacts are studied for the peak one hour period during each of those two periods.

Construction

Construction would occur over a period of 24 months. The project is expected to require a maximum on-site workforce of 250 individuals at any one time, with an anticipated average workforce of 100 individuals. Because the typical work day would consist of one shift between the hours of 7:00 AM and 7:00 PM, not all of the construction worker trips would be expected to occur during the Peak Periods identified above. Truck trips for delivering equipment and materials would be brought to the site before the maximum on-site workforce. On average, about 20 large vehicles would deliver equipment and materials per day, with most of these truck trips

moving outside of peak periods (HKA 2011). Table 4.18-1 presents the number of daily and peak hour worker commute trips and truck trips expected to be generated by the maximum work-force during project construction.

Table 4.18-1. Construction Trip Generation

Component	Daily Trips (PCEs*)	AM Peak Period		PM Peak Period	
		IN	OUT	IN	OUT
Solar Project	426	125	—	—	125
Guards	20	—	5	—	—
Personnel Subtotal	446	125	5	0	125
Deliveries and Equipment	Varies	18	15	—	—
Total	—	143	20	—	125

* Project truck trips were converted to passenger car equivalents (PCEs) by using a factor of 3 (i.e. the total number of trucks expected to access the site during the AM peak hour is 6 in and 5 out).
Source: Appendix H (HKA 2011)

Direct Effects

Measures of Effectiveness for Performance of Circulation System (LOS)

Construction of the proposed project would generate additional traffic on regional and local roadways. Construction worker commute trips and equipment and materials deliveries would increase existing traffic volumes in the project area.

As described in Section 4.18.1 Riverside County Circulation Element Policy C2.1 states that the County must maintain a target LOS "C" along County maintained roads and conventional state highways. As such, impacts to roadways would occur when the addition of project traffic causes roadway operations to degrade from an acceptable level (LOS C or better) to an unacceptable level (LOS D or worse). Intersections under joint jurisdiction with Caltrans may operate at an LOS of E.

As shown below in Table 4.18-2, the addition of project construction related traffic to the regional roadway network is expected to increase the delay at all intersections by less than one second and the LOS of these intersections would remain within the County target of LOS "C" or better. Drivers along these roadways would not be expected to experience substantial noticeable delays with the addition of project-related construction traffic.

Table 4.18-2. LOS Summary for Project Construction

Intersection	Control	Without Project		With Project	
		Delay (sec)	LOS	Delay (sec)	LOS
AM Peak Period					
SR-177 / I-10 EB	EB off ramp stops	9.1	A	10.0	B
SR-177 / I-10 WB	WB off ramp stops	9.1	A	9.9	A
SR-177 / Kaiser Road	SB Kaiser Road stops	8.5	A	8.6	A
PM Peak Period					
SR-177 / I-10 EB	EB off ramp stops	9.3	A	9.8	A
SR-177 / I-10 WB	WB off ramp stops	9.7	A	10.1	B
SR-177 / Kaiser Road	SB Kaiser Road stops	8.8	A	9.6	A

EB – eastbound
WB – westbound
Source: Appendix H (HKA 2011)

As discussed in Section 4.20, MM WAT-2 could require the project owner to transport water needed for construction of Alternative 4 by truck depending on overdraft conditions in the Chuckwalla Valley Groundwater Basin. If required, it is estimated that this would result in 50 truck trips per day in addition to the trucks presented in Table 4.18-1. The potential for these water truck trips to result in adverse effects to the LOS of existing roadways and intersections would be reduced through implementation of mitigation measure TRAN-1 presented under the "Mitigation Measures" subheading and summarized below.

- MM TRAN-1 (Alternative Water Source) would reduce impacts to LOS by requiring water trucks to arrive and depart the site outside of the AM and PM peak hours.

Air Traffic Obstruction and Safety

According to Federal Aviation Regulations, Part 77, Section 77.23 (a)(2), objects greater than 200 feet tall from the ground surface, or 200 feet above the elevation of the airport (whichever is higher), that are within three nautical miles (3.45 linear miles) of an airport could be considered an obstruction to aviation activities.

The proposed project would overlap a low-level military flight path. The project owner would coordinate with the Department of Defense R-2508 Complex Sustainability Office, Region IX, based in San Diego, California, as well as with local regional military installations to ensure that no impacts or conflicts occur during construction (AM-TRANS-4). The proposed project would be sufficiently distant (5 miles) from the former Desert Center Airport that no effects would occur. Construction of the proposed project would not substantially increase traffic at regional airports as most trips to the site would take place in cars or trucks. The proposed project would be located within 4 miles of the Eagle Mountain landing strip. The landing strip is located at an elevation that is at least 200 feet higher than the proposed project site and the tallest structures at the proposed project site would be the 34.5-kV collector poles, estimated at 52 feet above finished grade. Construction of Alternative 4 would not result in placement of objects greater than 200 feet tall from the ground surface, or 200 feet above the elevation of the airport (whichever is higher), that are within three nautical miles (3.45 linear miles).

Roadway Damage and Hazards

Project-generated traffic, especially heavy truck traffic, would accelerate the rate of deterioration of public roads traveled. The contribution of the proposed project to road deterioration would be negligible on I-10 because project-generated traffic would be a small portion of total traffic. However, effects on local roads could be more pronounced. Effects would be reduced with implementation of MM TRAN-2, which would require the project owner to restore roads to pre-construction conditions.

Most of the land surrounding the proposed project site is unimproved with the exception of Kaiser Road. The entrance to the proposed project site would be graded to dimensions to accommodate construction trucks; therefore, no adverse effects are expected to occur as a result of a street design feature. An emergency gate would be located in the southeast corner, with access to Beekley Road (north of Rice Road, west of Carr Road). Because this road would only be used during emergencies, no adverse effects are expected to occur due to use of this road.

Emergency Access

With the addition of project construction traffic, all intersections and roadways segments analyzed would operate at LOS A. At LOS A, traffic can move freely. Therefore, construction traffic would not result in adverse effects to access to the proposed project site (including movement of emergency vehicles) or nearby land uses. An emergency gate would be located in the southeast corner, with access to Beekley Road (north of Rice Road, west of Carr Road).

Conflict with Applicable Congestion Management Program or other Plans and Policies

The Regional Transportation Plan (RTP) is a multi-modal, long-range planning document prepared by the Southern California Association of Governments (SCAG), in coordination with federal, state, and other regional, subregional, and local agencies in southern California. The RTP includes programs and policies for congestion management, transit, bicycles and pedestrians, roadways, freight, and finances. The Riverside County Congestion Management Program (CMP) was established to more directly link land use, transportation, and air quality and to prompt reasonable growth management programs that would more effectively utilize new and existing transportation funds, alleviate traffic congestion and related impacts, and improve air quality. The proposed project involves construction of a renewable energy generation facility that would not involve construction of new transportation facilities or substantial alteration of existing transportation facilities (other than installation of an access driveway on Kaiser Road). There are no pedestrian or public transit facilities in the vicinity of the proposed project. As discussed above, project construction traffic would not reduce the LOS of area facilities below LOS C. Therefore the project would not conflict with the applicable RTA or CMP.

Indirect Effects

There are no indirect effects related to transportation and public access for construction.

Operation and Maintenance

Operational Trips

Operation of the project would require a staff of up to 8 permanent employees. No replacement/rotations of plant personnel are projected during this period. If the need for such a rotation arises, necessary arrangements would be coordinated with the owner on a case-by-case basis. The operational trip generation numbers conservatively assume up to 10 O&M staff per shift and up to two shifts per day. Operation of the project would also require up to 5 security personnel (conservatively estimated) and 5 deliveries per day. Given an O&M staff of 8 per shift, it is anticipated 1 round trip by each will be made to the proposed project site. Table 4.18-3 shows an anticipated schedule of the trips to and from the site each day during project operation.

Table 4.18-3. Operational Trip Generation

Component	Daily Round Trips	AM Peak Period		PM Peak Period	
		IN	OUT	IN	OUT
O&M Staff	20	—	10	10	—
Guards	10	—	5	5	—
Deliveries and Equipment	5	1	1	1	1
Total	35	1	16	16	1

Source: Appendix H (HKA 2011)

Direct Effects

Measures of Effectiveness for Performance of Circulation System (LOS)

Traffic related to operation of the project would generate a total of 17 trips during each the AM and PM peak hours. An increase of 17 trips during the peak hour would not impact area intersections or roadways. The existing intersections and roadways have sufficient capacity to absorb these 17 trips without a decrease in LOS or operation (as verified by the analysis of construction effects which shows the existing system is able to absorb over 125 AM Peak hour trips and PM peak hour trips). There is no concern for impacts to the study roads or intersection and no need for mitigation due to the operation and maintenance project trips for the project.

Air Traffic Obstruction and Safety

Because operation and maintenance of the project would not result in placement of objects greater than 200 feet tall from the ground surface, or 200 feet above the elevation of the airport (whichever is higher) within three nautical miles (3.45 linear miles) of an airport, direct effects of operating and maintaining Alternative 4 on air traffic would be identical to as those described for construction.

Roadway Damage and Hazards

Because operation and maintenance of Alternative 4 would result in substantially fewer vehicle trips than construction, direct effects of operating and maintaining Alternative 4 on roadway damage would be substantially less than those described for construction.

Emergency Access

Because operation and maintenance of Alternative 4 would result in the addition of substantially fewer vehicle trips to area roadways, direct effects of operating and maintaining Alternative 4 on emergency access would be substantially less than those described for construction.

Conflict with Applicable Congestion Management Program or other Plans and Policies

As described for construction of Alternative 4, there are no direct effects related to conflicts with applicable plans and policies that would occur as a result of operating and maintaining Alternative 4.

Indirect Effects

There are no indirect effects related to transportation and public access for construction.

Decommissioning

The proposed methods of decommissioning of the solar facility are summarized in Chapter 2. The expected operational lifetime of the project is 30 years; however, the actual life of the project could be longer or shorter. When permanent closure is appropriate, a decommissioning plan will be prepared and submitted to the BLM for review and approval. Decommissioning of the project would occur in compliance with the decommissioning plan. Decommissioning of the project may range from temporary “mothballing” to complete removal of equipment and restoration of the land to BLM approved specifications (enXco 2011). For the purposes of this analysis

of effects on transportation and public access, it is assumed that decommissioning would require a similar number of vehicle trips as construction of Alternative 4.

Direct Effects

Measures of Effectiveness for Performance of Circulation System (LOS)

The number of vehicle trips associated with decommissioning would be similar to those required for construction. As shown below in Table 4.18-2, the addition of project construction related traffic to the regional roadway network is expected to increase the delay at all intersections by less than one second but would not reduce the existing LOS to an unacceptable level. Drivers along these roadways would not be expected to experience substantial noticeable delays with the addition of project-related construction traffic. Therefore direct effects of Alternative 4 on the performance of the circulation system would be similar to those described for construction.

While truck traffic associated with decommissioning would be expected to be similar to that described for construction, it is difficult to determine the impacts of project decommissioning due to uncertainties of traffic conditions in the future. If the existing traffic is worse at the time of decommissioning than the current existing conditions, mitigation measures similar to MM TRAN-1 would be implemented during decommissioning, as part of the decommission plan to be developed and approved by the BLM.

Air Traffic Obstruction and Safety

Decommissioning of Alternative 4 would result in removal of all onsite structures. Therefore, direct effects of this alternative would have no effect on air traffic.

Roadway Damage and Hazards

Because the number of vehicle trips associated with decommissioning of the project would be similar to those associated with construction, direct effects of decommissioning of Alternative 4 on roadway damage and hazards would be identical to those described for construction of Alternative 4.

Emergency Access

Because the number of vehicle trips associated with decommissioning of the project would be similar to those associated with construction of Alternative 4, direct effects of decommissioning of Alternative 4 on emergency access would be identical to those described for construction of Alternative 4.

Conflict with Applicable Congestion Management Program or other Plans and Policies

Because the number of vehicle trips associated with decommissioning of the project would be similar to those associated with construction of Alternative 4, as described for construction of Alternative 4, there would be no direct effects related to conflicts with applicable plans and policies that would occur as a result of decommissioning of Alternative 4.

Indirect Effects

There are no indirect effects related to transportation and public access for construction.

Mitigation Measures

The following mitigation measure is required to reduce effects related to transportation and public access.

MM TRAN-1 Limit Water Truck Deliveries. All water truck deliveries are prohibited from arriving or departing the project during the AM Peak Period (6:00 AM to 9:00 AM) and PM Peak Period (4:00 PM to 6:00 PM).

MM TRAN-2 Restore Local Roads. The project owner shall document road conditions of Kaiser Road and any other local construction access roads prior to and at the end of project construction and decommissioning, and restore the roads to pre-construction (and pre-decommissioning) conditions in consultation with Riverside County and BLM. Should the project owner wish to engage in a cost sharing arrangement with other local project developers for restoring local roads, the burden of proof shall rest with the project owner to demonstrate that the roads will be restored to pre-construction (and pre-decommissioning) conditions, and any cost sharing arrangement requires Riverside County and BLM approval.

Residual Impacts and Unavoidable Adverse Effects

No unavoidable adverse effects to transportation and public access would result from implementation of Alternative 4.

4.18.7 Alternative 5 – Solar Project Excluding WHMA

Alternative 5 would be constructed within the same project boundaries as Alternative 5, except that it would exclude the portion of the site which is within the Palen-Ford Wildlife Habitat Management Area (WHMA), as shown on Figure 2-9, in Appendix A.

Construction

Although Alternative 5 covers a slightly smaller area than Alternative 4, the estimated number of construction-related truck trips would be the same for Alternative 5 as for Alternative 4. The direct and indirect effects of Alternative 5's construction will be the same as those described for Alternative 4.

Operation and Maintenance

Operation and maintenance of Alternative 5 would be nearly identical to that of Alternative 4, and effects would be consistent with those listed for Alternative 4.

Decommissioning

Decommissioning of Alternative 5 would be nearly identical to that of Alternative 4, and effects would be consistent with those listed for Alternative 4.

Mitigation Measures

The same mitigation measures would apply to Alternative 5 as apply to Alternative 4.

Residual Impacts and Unavoidable Adverse Effects

No unavoidable adverse effects to transportation and public access would result from implementation of Alternative 5.

4.18.8 Alternative 6 – Reduced Footprint Solar Project

Alternative 6 would be constructed within the same project boundaries as Alternative 4 except that it would exclude the 155-acre southern parcel of the project and a small portion of the northern parcel that contains a sensitive plant species, as shown on Figure 2-10, in Appendix A.

Construction

Although Alternative 6 covers a slightly smaller area than Alternative 4, the estimated number of construction-related truck trips would be the nearly identical for Alternative 6 as for Alternative 4. The direct and indirect effects of Alternative 6's construction will be the same as those described for Alternative 4.

Operation and Maintenance

Operation and maintenance of Alternative 6 would be nearly identical to that of Alternative 4, and effects would be consistent with those listed for Alternative 4.

Decommissioning

Operation and maintenance of Alternative 6 would be nearly identical to that of Alternative 4, and effects would be consistent with those listed for Alternative 4.

Mitigation Measures

The same mitigation measures would apply to Alternative 6 as apply to Alternative 4.

Residual Impacts and Unavoidable Adverse Effects

No unavoidable adverse effects to transportation and public access would result from implementation of Alternative 6.

4.18.9 Alternative 7 – High-Profile Reduced Footprint Solar Project

Alternative 7 would be constructed within the same project boundaries as Alternative 6. Alternative 7 would encompass an estimated 1,044 acres and would be an estimated 150 MW nominal capacity project. Project details are the same as for Alternative 4, with the only exception being the overall height of the panels for Alternative 7. Alternative 7 would use high-profile single-axis tracking panels that would have a total height of 15 feet.

Construction

Although Alternative 7 covers a slightly smaller area than Alternative 4 and requires single-axis tracking panels that would have a total height of 15 feet, the estimated number of construction-related truck trips would be the nearly identical for Alternative 7 as for Alternative 4. The direct and indirect effects of Alternative 7 construction will be the same as those described for Alternative 4.

Operation and Maintenance

Operation and maintenance of Alternative 7 would be nearly identical to that of Alternative 4, and effects would be consistent with those listed for Alternative 4.

Decommissioning

Operation and maintenance of Alternative 7 would be nearly identical to that of Alternative 4, and effects would be consistent with those listed for Alternative 4.

Mitigation Measures

The same mitigation measures would apply to Alternative 7 as apply to Alternative 4.

Residual Impacts and Unavoidable Adverse Effects

No unavoidable adverse effects to transportation and public access would result from implementation of Alternative 7.

4.18.10 Alternative A – No Gen-Tie

Under Alternative A, no gen-tie line would be constructed and no plan amendment would be issued. If this No Action Alternative were selected, the construction and effects of the gen-tie line would not occur, and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because there would be no amendment to the CDCA Plan and no gen-tie line approved for the site under this alternative, it is expected that proposed tower locations and pull sites would continue to remain in their existing conditions, with no new structures constructed or operated on and no ground disturbance. As a result, effects caused to transportation and public access related to the gen-tie would not occur.

4.18.11 Alternative B – Proposed Gen-Tie (Shared Towers)

Alternative B would share transmission infrastructure with the approved Desert Sunlight Solar Farm (DSSF) project; however, the baseline for environmental effects is the existing condition of the site in September 2011. At this time, construction of the DSSF transmission infrastructure had not yet commenced, so analysis of Alternative B must include all construction effects of this shared infrastructure.

Construction

Construction of Alternative B within the 12.1-mile by 160-foot-wide transmission corridor, plus additional fan-shaped areas at corners, would result in the permanent disturbance of 92 acres along the route, as described in Section 2.8 (Alternative B).

Over a 12-month construction period, the gen-tie workforce will average 30 employees and no more than 65 employees at any one point. A total of approximately 240 material deliveries are expected during the construction period for the gen-tie line.

Direct Effects

Measures of Effectiveness for Performance of Circulation System (LOS)

Construction of Alternative B would generate additional traffic on regional and local roadways. Construction worker commute trips and equipment and materials deliveries would increase existing traffic volumes in the project area.

As described in Section 4.18.1 Riverside County Circulation Element Policy C2.1 states that the County must maintain a target LOS "C" along County maintained roads and conventional state highways. As such, impacts to roadways would occur when the addition of project traffic causes roadway operations to degrade from an acceptable level (LOS C or better) to an unacceptable level (LOS D or worse). Intersections under joint jurisdiction with Caltrans may operate at an LOS of E.

The addition of gen-tie line construction related traffic to the regional roadway network is expected to increase the delay at all intersections; however, even if all construction workers commuted during peak hours, this increase of an average of 30 trips would be less than the increase of Alternative 4 which resulted in a delay of less than one second. The existing LOS of these intersections is not expected to change and the construction effects of Alternative B would be a temporary effect. Drivers along these roadways would not be expected to experience substantial noticeable delays with the addition of Alternative B construction traffic.

Air Traffic Obstruction and Safety

Alternative B would overlap a low-level military flight path. The project owner would coordinate with the Department of Defense R-2508 Complex Sustainability Office, Region IX, based in San Diego, California, as well as with local regional military installations to ensure that no effects or conflicts occur during construction (AM-TRANS-4). Alternative B would be 2.25 miles from the former Desert Center Airport and within 4 miles of the Eagle Mountain landing strip. Because the landing strip is located at an elevation that is at least 200 feet higher than Alternative B and the tallest structures along the gen-tie line would be the 135-foot transmission poles, construction of Alternative B would not result in placement of objects greater than 200 feet tall from the ground surface, or 200 feet above the elevation of the airport (whichever is higher), that are within three nautical miles (3.45 linear miles). Construction of the Alternative B would not substantially increase traffic at regional airports as most trips to the site would take place in cars or trucks.

Roadway Damage and Hazards

Project-generated traffic, especially heavy truck traffic, would accelerate the rate of deterioration of public roads traveled. The contribution of Alternative B to road deterioration would be negligible on I-10 because construction-generated traffic would be a small portion of total traffic. However, effects on local roads could be more pronounced. Effects would be reduced with implementation of MM TRAN-2, which requires restoration of roads.

Emergency Access

With the addition of project construction traffic, all intersections and roadways segments analyzed would operate at LOS A. At LOS A, traffic can move freely. Therefore, construction

traffic would not result in adverse effects to access to the proposed project site (including movement of emergency vehicles) or nearby land uses.

Conflict with Applicable Congestion Management Program or other Plans and Policies

The Regional Transportation Plan is described in Section 4.18.6 for Alternative 4. Alternative B involves construction of a gen-tie line that would not involve construction of new transportation facilities or substantial alteration of existing transportation facilities (other than installation of access spur roads to the transmission towers along Kaiser Road). There are no pedestrian or public transit facilities in the vicinity of Alternative B. As discussed above, project construction traffic would not reduce the LOS of area facilities below LOS E. Therefore Alternative B would not conflict with the applicable RTA or CMP.

Indirect Effects

There are no indirect effects related to transportation and public access for construction.

Operation and Maintenance

The DHSP operations and maintenance personnel would perform periodic maintenance of Alternative B, and no additional personnel would be required. Therefore no increase of trips would occur above those expected for Alternative B There is no concern for effects to the study roads or intersection, roadway damage and hazards, or emergency access and no need for mitigation due to the operation and maintenance project trips for the project.

Direct Effects

Air Traffic Obstruction and Safety

Because operation and maintenance of Alternative B would not result in placement of objects greater than 200 feet tall from the ground surface, or 200 feet above the elevation of the airport (whichever is higher) within three nautical miles (3.45 linear miles) of an airport, direct effects of operating and maintaining Alternative B on air traffic would be identical to as those described for construction.

Conflict with Applicable Congestion Management Program or other Plans and Policies

As described for construction of Alternative B, there are no direct effects related to conflicts with applicable plans and policies that would occur as a result of operating and maintaining Alternative B.

Indirect Effects

There are no indirect effects related to transportation and public access for construction.

Decommissioning

For the purposes of this analysis of effects on transportation and public access, it is assumed that decommissioning would require a similar number of vehicle trips as construction of Alternative B.

Direct Effects

Measures of Effectiveness for Performance of Circulation System (LOS)

The number of vehicle trips associated with decommissioning would be similar to those required for construction. The addition of project construction related traffic to the regional roadway network is expected to increase the delay at all intersections by less than one second but would not change the existing LOS of these intersections. As such drivers along these roadways would not be expected to experience substantial noticeable delays with the addition of project-related construction traffic. Therefore direct effects of Alternative B on the performance of the circulation system would be similar to those described for construction.

Air Traffic Obstruction and Safety

Decommissioning of Alternative B would result in removal of all transmission structures. Therefore, direct effects of this alternative would have no effect on air traffic.

Roadway Damage and Hazards

Because the number of vehicle trips associated with decommissioning of the project would be similar to those associated with construction, direct effects of decommissioning of Alternative B on roadway damage and hazards would be identical to those described for construction of Alternative B.

Emergency Access

Because the number of vehicle trips associated with decommissioning of the project would be similar to those associated with construction of Alternative B, direct effects of decommissioning of Alternative B on emergency access would be identical to those described for construction of Alternative B.

Conflict with Applicable Congestion Management Program or other Plans and Policies

Because the number of vehicle trips associated with decommissioning of the project would be similar to those associated with construction of Alternative B, as described for construction of Alternative B, there would be no direct effects related to conflicts with applicable plans and policies that would occur as a result of decommissioning of Alternative B.

Indirect Effects

There are no indirect effects related to transportation and public access for construction.

Mitigation Measures

Construction, operation and maintenance, and decommissioning of Alternative B would not result in substantial adverse direct or indirect effects to transportation and public access such that mitigation measures are required. No mitigation measures are proposed.

Residual Impacts and Unavoidable Adverse Effects

No unavoidable adverse effects to transportation and public access would result from implementation of Alternative B.

4.18.12 Alternative C – Separate Transmission Towers within Same ROW

Alternative C would parallel the approved DSSF gen-tie line, and would be located on separate towers within the same, or a slightly larger, ROW, see Figure 2-14, Appendix A. Construction of Alternative C within the 12.1-mile by 160-foot-wide transmission corridor, plus additional fan-shaped areas at corners, would result in the permanent disturbance of 92 acres along the route, as described in Section 2.9 (Alternative C).

Construction

Alternative C would occur adjacent to Alternative B. The estimated number of construction-related truck trips would be the same for Alternative C as for Alternative B. The direct and indirect effects of Alternative C's construction will be the same as those described for Alternative B.

Operation and Maintenance

Operation and maintenance of Alternative C would be nearly identical to that of Alternative B, and effects would be consistent with those listed for Alternative B.

Decommissioning

Decommissioning of Alternative C would be nearly identical to that of Alternative B, and effects would be consistent with those listed for Alternative B.

Mitigation Measures

Construction, operation and maintenance, and decommissioning of Alternative C would not result in substantial adverse direct or indirect effects to transportation and public access such that mitigation measures are required. No mitigation measures are proposed.

Residual Impacts and Unavoidable Adverse Effects

No unavoidable adverse effects to transportation and public access would result from implementation of Alternative C.

4.18.13 Alternative D – Cross-Valley Alignment

Alternative D would parallel the approved Desert Sunlight gen-tie line for approximately 2,400 feet along the east side of Kaiser Road until intersecting with the existing SCE transmission line ROW. Alternative D would turn southeast and run parallel to the existing transmission ROW for 7.2 miles, then turn south for 0.6 miles, continuing due west for 0.5 miles until it turns south across I-10 and continues to the Red Bluff Substation, see Figure 2-15, in Appendix A.

Construction

The estimated number of construction-related truck trips would be the same for Alternative D as for Alternative B. The direct and indirect effects of Alternative D's construction will be the same as those described for Alternative B for effects to performance of the circulation system, roadway damage and hazards, emergency access, and conflicts with applicable congestion management programs or other plans and policies.

Air Traffic Obstruction and Safety

Alternative D would be located 2,800 feet south of the former Desert Center Airport, which is now a private special-use airport with no FAA-approved instrument approach procedure. Alternative D would be located at an elevation estimated to be 40 feet higher than the airport, 590 feet and 550 feet, respectively. The largest structure along the gen-tie line would be the proposed 135-foot tall transmission towers. Construction of the Alternative D would not result in placement of objects greater than 200 feet tall from the ground surface, or 200 feet above the elevation of the airport (whichever is higher), that are within three nautical miles (3.45 linear miles). However, at this location, the towers would be located below the 20:1 obstacle clearance surface that would typically be associated with a public use airport operated under visual flight rules (VFR). Form 7460-1, Notice of Proposed Construction or Alteration, must be filed with the FAA if an object to be constructed has the potential to affect navigable airspace according to these standards. It is not mandatory that a Form 7460-1 be filed with the FAA because the airport is privately-owned and privately-used and there is no FAA-approved instrument approach procedure. However, it would be prudent to coordinate with the FAA. Coordination with the airport owners (AM-TR-3) would occur prior to construction. No substantially adverse effects would occur.

Operation and Maintenance

Operation and maintenance of Alternative D would be nearly identical to that of Alternative B, and effects would be consistent with those listed for Alternative B, except for air traffic obstruction and safety. Direct effects of operating and maintaining Alternative D on air traffic would be identical to as those described for construction.

Decommissioning

Decommissioning of Alternative D would be nearly identical to that of Alternative B, and effects would be consistent with those listed for Alternative B.

Mitigation Measures

Construction, operation and maintenance, and decommissioning of Alternative D would not result in substantial adverse direct or indirect effects to transportation and public access such that mitigation measures are required. No mitigation measures are proposed.

Residual Impacts and Unavoidable Adverse Effects

No unavoidable adverse effects to transportation and public access would result from implementation of Alternative D.

4.18.14 Alternative E – New Cross-Valley Alignment

Alternative E would exit the south end of the solar facility site at a point 0.8 miles from its southeast corner. It would travel southeast for 1.8 miles across properties owned in fee by MWD then turn east for 0.5 miles, then run southeast for 3.6 miles, then due south for 3.8 miles then turn west for 1.75 miles to reach the Red Bluff Substation, see Figure 2-16, in Appendix A.

Construction

The estimated number of construction-related truck trips would be the same for Alternative D as for Alternative B. The direct and indirect effects of Alternative D's construction will be the same as those described for Alternative B for effects to performance of the circulation system, roadway damage and hazards, emergency access, and conflicts with applicable congestion management programs or other plans and policies.

Air Traffic Obstruction and Safety

Alternative E would be located one mile north of the former Desert Center Airport at the same estimated elevation. The largest structure along the gen-tie line would be the proposed 135-foot tall transmission towers. Construction of the Alternative E would not result in placement of objects greater than 200 feet tall from the ground surface, or 200 feet above the elevation of the airport, that are within three nautical miles (3.45 linear miles) nor would the towers be located below the 20:1 obstacle clearance surface that would typically be associated with a public use airport operated under visual flight rules (VFR). No substantially adverse effects would occur.

Operation and Maintenance

Operation and maintenance of Alternative E would be nearly identical to that of Alternative B, and effects would be consistent with those listed for Alternative B, except for air traffic obstruction and safety. Direct effects of operating and maintaining Alternative E on air traffic would be identical to as those described for construction.

Decommissioning

Decommissioning of Alternative E would be nearly identical to that of Alternative B, and effects would be consistent with those listed for Alternative B.

Mitigation Measures

Construction, operation and maintenance, and decommissioning of Alternative E would not result in substantial adverse direct or indirect effects to transportation and public access such that mitigation measures are required. No mitigation measures are proposed.

Residual Impacts and Unavoidable Adverse Effects

No unavoidable adverse effects to transportation and public access would result from implementation of Alternative E.

4.18.15 Cumulative Effects

Cumulative effects on transportation and public access resulting from the project or an alternative would have the potential to occur if vehicle traffic from other projects traveled the same roadways at the same time as traffic from the DHSP. Construction-related traffic effects would mostly result from increased construction (and decommissioning) traffic on the regional roadways. Operation and maintenance of the proposed project or its alternatives would have minimal transportation or traffic associated with it other than for maintenance activities and solar facility operation. Therefore, the only opportunity for cumulatively significant transportation and/or

traffic effects to occur would be during the two-year construction phase of the project and the decommissioning phase.

Geographic Scope

The geographic extent of this cumulative analysis includes the regional roadway network considered for analysis of project effects. Tables 4.1-1 and 4.1-2 respectively provide a comprehensive listing of all existing and foreseeable projects that could contribute to a cumulative effect on the environment. Traffic from existing projects is included in the baseline and therefore is already included in the analysis of project effects discussed above. Therefore, the cumulative analysis focuses on the potential for effects of the proposed project or its alternatives to combine with impacts of reasonably foreseeable projects. Of the reasonably foreseeable projects identified in Table 4.1-2, effects of the Desert Sunlight Solar Farm Project have the most potential to combine with effects of the DHSP due to the proximity of that project to the proposed project and because the construction schedules for each project are expected to overlap. The other projects listed in Table 4.1-2 that would combine with the DHSP are the Eagle Mountain Pumped Storage Project, Palen Solar Energy Project, SCE Red Bluff Substation, Desert Center 50, Sol Orchard, Eagle Mountain Landfill Project, and Silverado Solar Power Project. Table 4.18-4 presents these projects.

Table 4.18-4. Cumulative Projects within the Geographic Scope of Cumulative Analysis

Resource Area / BLM Program Area	Geographic Area of Consideration	Elements to Consider	BLM Authorized and Other Known County Projects/Actions/Activities
Transportation and Public Access	The regional roadway network considered for analysis of project-impacts	Performance of Circulation System (LOS)	• Eagle Mountain Pumped Storage Project • Palen Solar Energy Project • Desert Sunlight Project • SCE Red Bluff Substation • Desert Center 50 • Sol Orchard • Eagle Mountain Landfill Project • Silverado Power I, II, III

The temporal extent of this cumulative analysis would be the two-year construction phase of the project and the decommissioning phase.

Cumulative Effects Analysis

Alternatives 1, 2, 3, and A. Alternatives 1, 2, 3, and A would not have any project-level effects and would not contribute to cumulative adverse effects.

Alternative 4.

Measures of Effectiveness for Performance of Circulation System (LOS)

A cumulative LOS analysis was prepared specifically for the proposed project plus the Desert Sunlight Solar Farm Project because of the proximity of the Desert Sunlight Solar Farm Project to the proposed project and because the construction schedules for each project are expected to overlap. The purpose of the cumulative LOS analysis was to identify the effect that concurrent construction of the two projects would have on the study area roadway segments and intersections. Table 4.18-5 summarizes the trip generation for the Desert Sunlight Solar Farm Project.

These trips would be expected to combine with the trips generated by the proposed project (summarized in Table 4.18-1).

Table 4.18-5. Desert Sunlight Solar Farm Construction Trip Generation

Component	Daily Trips	AM Peak Period		PM Peak Period	
		IN	OUT	IN	OUT
Solar Farm & Transmission Line	204	88	2	—	10
Red Bluff Substation	108	46	—	—	8
Visitors	10	—	—	—	—
Personnel Subtotal	322	134	2	—	18
Deliveries, Concrete, Equipment	—	18	15	—	—
Total	322	152	17	—	18

Source: Appendix H (HKA 2011)

As shown below in Table 4.18-6, the addition of traffic from the proposed project and the Desert Sunlight Solar Farm Project to the regional roadway network is expected to increase the delay at all intersections by one second or less. The LOS of two intersections would be reduced from LOS A to LOS B during the AM Peak Period and the LOS of one intersection during the PM Peak Period would be reduced from LOS A to LOS B. Riverside County and Caltrans consider LOS B to be acceptable. Consequently, drivers along these roadways would not be expected to experience substantial noticeable delays with the addition of project-related construction traffic. Therefore, the proposed project or an alternative would not contribute to adverse cumulative effects associated with effectiveness for performance of circulation system.

Table 4.18-6. LOS Summary for Cumulative Conditions

Intersection	Control	Without Project*		With Project	
		Delay (sec)	LOS	Delay (sec)	LOS
AM Peak Period					
SR-177 / I-10 EB	EB off ramp stops	9.4	A	10.6	B
SR-177 / I-10 WB	WB off ramp stops	9.4	A	10.5	B
SR-177 / Kaiser Road	SB Kaiser Road stops	8.6	A	8.7	A
PM Peak Period					
SR-177 / I-10 EB	EB off ramp stops	9.3	A	9.9	A
SR-177 / I-10 WB	WB off ramp stops	9.7	A	10.1	B
SR-177 / Kaiser Road	SB Kaiser Road stops	8.8	A	9.6	A

* The background traffic counted at the site was increased by 3% to project the background traffic expected during the construction period. To conservatively account for the construction traffic generated by the Desert Sunlight Solar Farm Project, half of its projected traffic for the solar farm construction, the transmission line and Red Bluff Substation construction trips are included. The highest months of construction traffic for the Desert Sunlight Solar Farm Project were anticipated to be the 5th and 6th month of construction prior to the beginning of the DHSP construction.

Source: Appendix H (HKA 2011)

Air Traffic Obstruction and Safety

There are many low-level military flight paths in the area. The implementation of foreseeable projects could present additional obstacles for low-level flight, limiting the military's ability to conduct these operations and resulting in a cumulatively considerable impact to air travel. However, there are few airports in the area and few if any projects would be in proximity to them. Similar to the proposed project, conflicts between cumulative projects and air traffic would be

expected to be resolved between the affected airport and the proponent of the specific project; therefore, no cumulative effects would result.

Roadway Damage and Hazards

Impacts of the proposed project related to roadway deterioration would be reduced with implementation of MM TRAN-2, which requires restoration of local roads. Cumulative projects would be expected to be required to implement similar measures. Consequently, any damage to roadways would be expected to be repaired by project proponents (or funds contributed by project proponents) and adverse cumulative effects would not occur.

Emergency Access

With the addition of the proposed project and cumulative traffic, all intersections and roadways segments analyzed would operate at LOS B. At LOS A, traffic can move freely. Therefore, construction traffic would not impact access to the proposed project site (including movement of emergency vehicles) or nearby land uses.

Conflict with Applicable Congestion Management Program or other Plans and Policies

As discussed above, the combined effects of traffic from the proposed project and cumulative projects would not reduce the LOS of area facilities below LOS D or LOS E. Therefore adverse cumulative effects related to conflicts with the applicable RTA or CMP would not occur.

Alternatives 5, 6, and 7. In light of their similarities, the transportation and public access cumulative effects for Alternatives 5 through 7 would be essentially the same as described for Alternative 4 and cumulative effects would not be substantially adverse.

Alternative B. Alternative B would not contribute to cumulative traffic effects, as the cumulative scenario assumes concurrent construction of the Desert Sunlight approved gen-tie and Alternative B conductor stringing using the same crew at the same time, with no additional work required for Alternative B beyond what is required for the Desert Sunlight gen-tie. No cumulative effects would occur due to air traffic obstruction and safety, emergency access, or conflicts with applicable congestion management programs.

Alternatives C, D, and E. The transportation and public access cumulative effects for Alternatives C, D, and E would be similar to Alternative B. However, Alternatives C, D, and E would require construction of new gen-tie line towers and therefore would require use of additional construction traffic trips. Even with the addition of up to 30 traffic trips, cumulative impacts would not be substantially adverse because the LOS of the roads would not reduce the LOS of area facilities below LOS D or LOS E. No cumulative effects would occur related to emergency access or conflicts with applicable congestion management programs. Effects of Alternative C, D, and E to roadway damage would be reduced with implementation of MM TRAN-2 as with Alternative 4. Effects of Alternative C to air traffic obstruction would be reduced with implementation of AM TR-3.

4.18.16 CEQA Considerations

This section is included in this EIS for future use by CEQA Lead and Responsible agencies, and is not required under NEPA.

CEQA Significance Criteria

The significance criteria listed below are from the Environmental Checklist Form in Appendix G of the CEQA Guidelines. These criteria are used to determine whether the project or alternative would result in significant impacts to transportation and public access under CEQA. The project and alternatives would result in a significant impact to transportation and public access if one of the following criteria is met.

TR-1 Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit.

TR-2 Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways.

TR-3 Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.

TR-4 Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).

TR-5 Result in inadequate emergency access.

TR-6 Conflict with adopted policies, plans or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

For the proposed project and alternatives, the following CEQA criteria were determined to be inapplicable or to result in no impact under all alternatives. The determination regarding these significance criteria is discussed below, and these criteria are not discussed further in this section.

- Substantially increase hazards due to a design feature:

  The proposed project and alternatives would not include a design feature or incompatible uses that would result in an increase in hazards; therefore, there would be no impact.

CEQA Significance Determination

Alternatives 1, 2, 3, and A would not have any impacts related to transportation and public access. Under these alternatives the DHSP would not be approved and would not be constructed. Traffic would remain in its existing state.

Alternative 4. The proposed solar layout would develop 1,208 acres of BLM-administered multiple use land for solar energy production and would result in approximately 570 daily trips with 114 trips into the solar facility and 20 trips out of the solar facility during the AM Peak Period and 95 trips out of the solar facility during the PM Peak Period. The addition of Alternative 4 construction related traffic to the regional roadway network is expected to increase the

delay at all intersections by less than one second but would not change the existing LOS of these intersections, which are operating at LOS A, as noted in Section 4.18.3. Riverside County and Caltrans consider LOS A to be acceptable. Therefore, Alternative 4 would not impact plan, ordinance or policies establishing measures of effectiveness for the performance of the circulation system (TR-1) nor conflict with an applicable congestion management program (TR-2).

Alternative 4 would be located over 2 miles from the nearest airport and landing strip as noted in Section 4.18.3. Therefore, Alternative 4 would not result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks (TR-4).

Alternative 4 would not result in inadequate emergency access because the regional roadways would continue to operate at an acceptable LOS A (TR-5).

Alternative 4 would not conflict with adopted policies, plans or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities (TR-6), see Section 4.18.3.

Alternative 5. Impacts from Alternative 5 would be the same as those under Alternative 4.

Alternative 6. Impacts from Alternative 6 would be the same as those under Alternative 4.

Alternative 7. Impacts from Alternative 7 would be the same as those under Alternative 4.

Alternative B. Alternative B would develop a gen-tie line and would result in approximately 30 daily construction trips. The addition of Alternative B construction related traffic to the regional roadway network is expected to increase the delay at all intersections by less than one second but would not change the existing LOS of these intersections, which are operating at LOS A, as noted in Section 4.18.11. Riverside County and Caltrans consider LOS A to be acceptable. Therefore, Alternative B would not impact plan, ordinance or policies establishing measures of effectiveness for the performance of the circulation system (TR-1) nor conflict with an applicable congestion management program (TR-2).

Alternative B would be located over 2 miles from the nearest airport and landing strip as noted in Section 4.18.11. Therefore, Alternative B would not result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks (TR-4).

Alternative B would not result in inadequate emergency access because the regional roadways would continue to operate at an acceptable LOS A (TR-5).

Alternative B would not conflict with adopted policies, plans or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities (TR-6), see Section 4.18.11.

Alternative C. Impacts for Significance Criteria TR-1 through TR-6 would be essentially the same for Alternative C as for Alternative B as discussed in Section 4.18.12.

Alternative D. Impacts for Significance Criteria TR-1, TR-2, TR-5, and TR-6 would be essentially the same for Alternative D as for Alternative B as discussed in Section 4.18.13.

Alternative D would be located 2,800 feet south of the former Desert Center Airport. The largest structure along the gen-tie line would be the proposed 135-foot tall transmission towers. As noted in Section 4.18.13, Form 7460-1, Notice of Proposed Construction or Alteration, must be filed with the FAA if an object to be constructed has the potential to affect navigable airspace according to FAA standards. It is not mandatory that a Form 7460-1 be filed because the airport is privately-owned and privately-used and there is no FAA-approved instrument approach procedure. Coordination with the airport owners (AM-TR-3) would occur prior to construction would ensure that no changes in air traffic patterns occurred and all impacts to navigable airspace were less than significant (TR-3).

Alternative E. Impacts for Significance Criteria TR-1 through TR-6 would be essentially the same for Alternative E as for Alternative B as discussed in Section 4.18.15.

4.19 VISUAL RESOURCES

This section discusses effects on visual resources that would occur with implementation of the Desert Harvest Solar Project (DHSP), including cumulative effects, and mitigation measures to avoid or reduce visual effects. Overall, the DHSP would result in the long-term visual alteration of landscapes and viewsheds from BLM-administered lands, other public lands, and private lands.

An assessment was made of the landscape changes that would be associated with the construction and operation of the proposed project and alternatives as seen from various vantage points including vista viewpoints. A scenic vista is a distant view of a broad area that is visually or aesthetically pleasing, typically because of the mostly undeveloped landscape being viewed. Although there are no federal, state, or locally designated scenic vistas, general scenic vistas across the landscape are still available. Most scenic vistas involving the DHSP are from viewpoints along Interstate (I-) 10, along State Route (SR-) 177 in Desert Center and Lake Tamarisk, and from surrounding ridgelines in Joshua Tree Wilderness, though these locations are more difficult to access.

4.19.1 Methodology for Analysis

An *adverse visual effect* typically occurs within public view when: (1) an action perceptibly changes existing features of the physical environment so that they no longer appear to be characteristic of the subject locality or region; (2) an action introduces new features to the physical environment that are perceptibly uncharacteristic of the region and/or locale; or (3) visually prominent natural or cultural features of the landscape become less visible (e.g., partially or totally blocked from view) or are removed. Changes that seem uncharacteristic are those that appear out of place, discordant, or distracting. The degree of the visual effect depends upon how noticeable the adverse change may be. The noticeability of a visual effect is a function of project features, context, and viewing conditions (angle of view, distance, primary viewing directions, and duration of view).

The factors considered in determining adverse effects on visual resources included: (1) scenic quality of the DHSP site and vicinity; (2) available visual access and visibility, frequency, and duration that the landscape is viewed; (3) viewing conditions (distance, angle of observation, relative size or scale, spatial relationships, motion, light conditions, seasonable variability and use, atmospheric conditions, and recovery time) and the degree to which the DHSP components would dominate the view of the observer; (4) resulting contrast (form, line, color, and texture) of the project facilities or activities with existing landscape characteristics; (5) the extent to which DHSP features or activities would block views of higher value landscape features; and (6) the level of public interest in the existing landscape characteristics and concern over potential changes. Digital techniques were used to produce simulations of the DHSP as it would appear with implementation as seen from several Key Observation Points (KOPs). The proposed project and alternatives simulations assisted in the on-site assessment of the contrast of the action alternatives with existing landscape elements.

Effects on visual resources within the project study area (northern Chuckwalla Valley and surrounding ridgelines) could result from various activities including: facility construction, establishment of construction staging areas and access roads, and project operation or presence of the built facilities. The impact methodology and results of the impact assessment are discussed

below. The impact methodology is described in greater detail in Appendix G-1 and the results of the impact assessment are summarized and presented as a series of foldout tables in Appendix G-2. Appendix G-4 presents the Visual Resource Management (VRM) Contrast Rating forms for each KOP.

BLM VRM Contrast Analysis Methodology

Under the BLM's Visual Contrast Rating (VCR) System, the proposed project and alternatives are analyzed for their effects on visual resources using an assessment of the visual contrast within the landscape created by components of the DHSP. Impacts to the inventoried visual resource values and conformance with Interim VRM Class Objectives are evaluated through a contrast rating process described below, and in greater detail in **Appendix G-1**. The degree to which the proposed project and alternatives adversely affect the visual quality of a landscape is directly related to the amount of visual contrast between the action alternative and the existing landscape character.

Visual Contrast Ratings were conducted using the BLM's VRM System manuals (BLM 1986b, 1984). The Visual Contrast Rating Forms are provided in Appendix G-4. Under the VRM System, the degree to which a project or activity affects the visual quality of a landscape depends on the visual contrast created between the project components and the major features, or predominant qualities, in the existing landscape. Visual contrast evaluates a project's consistency with the visual elements of form, line color, and texture already established in the viewshed. In a sense, visual contrast indirectly indicates a particular landscape's ability to absorb a project's components and location without resulting in an uncharacteristic appearance. Other elements that are considered in evaluating visual contrast include the degree of natural screening by vegetation and landforms; placement of structures relative to existing vegetation, landforms and other structures; observer's angle of view relative to the Proposed Action; distance from the point of observation; viewing duration/spatial relationships; atmospheric conditions; season of use; lighting conditions; and relative size or scale of a project. Once the degree of anticipated contrast is determined (ranging from none to strong), a conclusion on the overall level of change is made (ranging from very low to high) and compared to the applicable VRM Class objective for a determination of conformance with the Interim VRM Class objectives.

For DHSP, the assigned Interim VRM Class is **VRM Class IV**. The management objective for VRM Class IV is as follows.

> ***VRM Class IV****. The objective is to provide for management activities that require major modification of the landscape character. The level of change to the characteristic landscape can be high. Management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repetition of the basic landscape elements.*

According to BLM policy (BLM Manual H-8410-1; BLM 1986a) Interim Visual Resource Management (VRM) classes are established where a project is proposed and there are no approved VRM objectives in the applicable land use plan, as is the case for the DHSP project site which is governed by the California Desert Conservation Area (CDCA) Plan. These interim classes must 1) consider the area's visual values as summarized in the latest visual resource inventory results and 2) be consistent with the multiple-use objectives and use allocations set forth in the

plan which covers the DHSP site. While a comprehensive plan amendment is underway (Desert Renewable Energy Conservation Plan) which will establish long-term VRM classifications for the entire CDCA Plan area, the CDCA Plan currently does not have established VRM objectives. Therefore, until this landscape-level plan amendment is completed the BLM is establishing interim VRM classes consistent with H-8410-1 for project-level actions within the CDCA planning area, such as the DHSP.

An analysis of scenic quality, viewer sensitivity and distance zones in the most recent Visual Resource Inventory (VRI) for the project study area concluded that the inventory class is VRI II (see Section 3.19.1 and Appendix G-1 for additional discussion of VRI). The CDCA Plan allocation for the project study area is Multiple Use Class (MUC) M, which allows for solar electric facilities. Specific projects must be evaluated through a plan amendment to ensure consistency with all goals and objectives for this class. The conformity of the DHSP with the CDCA Plan's Energy Production and Utility Corridors Element Decision Criteria is shown in Table 3.22-2.

Mitigation Measures VR-1 through VR-5 would be implemented to minimize the visual impacts of the proposed project or any action alternatives. However, the level of contrast with the surrounding landscape would still be high when viewed from a variety of vantage points including elevated viewpoints in surrounding wilderness areas and along I-10. Taking the inventory class into consideration, recent developments that have been undertaken and/or approved in the project study area, the employment of mitigation measures, and the DHSP's consistency with the MUC, an Interim VRM Class IV has been established for the DHSP site. The objective of this class is "…to provide for management activities which require major modifications of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt must be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic visual elements."

Note that this interim VRM class assignment applies only to this specific project footprint. Any other projects would need to be analyzed and assigned an interim VRM class on a case by case basis based on an analysis of their conformance with land use plan objectives. Also, the BLM will require that all relevant and reasonable mitigation measures be employed to reduce project contrast to moderate levels (commensurate with Class IV VRM objectives), except for those specific project components and from those specific KOPs where it can be demonstrated that, even with mitigation, the project still has a high degree of contrast.

In addition to the permanent visual contrast created in the landscape, the proposed project and alternatives were analyzed for adverse effects due to lighting and glare, visible dust plumes, as well as temporary construction-related disturbances.

Direct versus Indirect Effects on Visual Resources

The impact discussions presented later in this section address the direct effects on visual resources since visual resources effects tend to almost always be direct. Two exceptions include increased traffic on roadways beyond the immediate DHSP site during construction and perceptions of (visible) regional industrialization. Increased traffic associated with construction is addressed under the construction effects heading. Perceptions of regional industrialization are addressed in the cumulative effects section.

Combined Effects of Solar Facility and Gen-Tie Alternatives

As in other sections of Chapter 4 of this EIS, visual effects analysis is conducted separately for the solar facility alternatives and the gen-tie line alternatives. This methodology allows for a clean comparison among alternatives, and a clean evaluation of the combination of any solar facility action alternative with any gen-tie action alternative. Therefore, the impact analysis below does not present the combined effects of each solar facility action alternative with each gen-tie action alternative. That combination of effects is done in Section 2.14, Summary of Comparison of Effects by Alternative. Nevertheless, for visual resources, it is useful for the analyst to prepare simulations that capture both the solar facility alternatives and the gen-tie line alternatives. Therefore, it is noted that for visual resources the combined effects of the gen-tie action alternatives with any of the solar facility action alternatives are additive, and they typically slightly increase the severity of visual effects compared to the effects of the solar facility alternatives alone, as the solar facility typically represents the most prominent visual feature of the DHSP overall. In addition, the reader is directed to the simulations prepared for the DHSP presented in Appendix A, which simulate the presence of both the solar facility and gen-tie alternatives.

Mitigation Approach

Mitigation for visual resources effects resulting from energy infrastructure and similar types of industrial facilities typically focuses on methods to minimize the visibility of the resulting visual change by (1) relocating the change (action) to a less visible location; (2) screening the change from view; or (3) blending the change with the background (by selective use of coloration and/or screening). By their very nature, solar facilities and transmission lines tend to be large and exposed, and thus, difficult to either hide from view or blend into the background. Also problematic is the construction of permanent access and spur roads and "temporary" cleared areas that become persistent in arid and semi-arid landscapes where vegetation recruitment and growth are slow. These features often cause land scarring and unnatural and discordant demarcations in the vegetation landscape that increase the visual contrast of a project's activities. In some cases there are techniques that can reduce the prominence of land scarring and changes though they may not substantially reduce the adverse effect.

One technique that can be effective in mitigating the visual impact of large transmission structures is changing the structure design. Lattice structure designs tend to blend with background landscapes better when viewed from distance because of the "transparency" effect imparted by the lattice design. However, from closer viewing locations, the lattice structure appears very complex and industrial. Tubular steel structures tend to be more visible at distance than lattice structures because of the solid mass of the vertical support structure and the absence of the transparency effect. However, when viewed from closer viewing locations, the tubular steel structure appears simpler in design and less complex and massive relative to a lattice structure. For the DHSP, the proposed and action alternative gen-tie routes would be visible from a variety of vantagepoints both close and distant. So, there is not an ideal structure design, The tubular design would be less visually contrasting along roadways and adjacent to residences, and the lattice design would be more appropriate for more distant locations in the center of Chuckwalla Valley. However, transitions between different structure designs are inherently very visually contrasting. So, mixing structure types is generally not advisable.

Undergrounding transmission lines can also be an effective solution in mitigating aboveground visual impacts. However, the BLM has previously determined during the Desert Sunlight Solar Farm environmental review process that undergrounding would not be an appropriate mitigation approach in this location.

The following techniques were considered where appropriate for the proposed project and action alternatives:

- Consider alternative low-impact construction techniques to minimize prominent land scarring visible to sensitive viewpoints.
- Require structure, non-specular surface and color treatments to reduce visual contrast associated with specularity and discordant color and/or glare, and facilitate the blending of the structure with the surrounding landscape.
- Require vegetated buffer zones adjacent to major travel corridors to provide partial screening of Project facilities.
- Require revegetation and restoration efforts to mitigate the unnatural demarcation in vegetation landscapes caused by removal of, or changes in the vegetation within the project area as a result of clearing and maintenance.
- Require strategic planting of revegetation to intersect sightlines and screen structures from view to the extent feasible.
- Require the co-location or consolidation of facilities to minimize the proliferation of built facilities and industrial character across the desert landscape.
- Require strategic siting of structures to reduce in-line views of linear facilities and/or reduce the number of structures visible in the primary cone of vision of travelers on major and local roadways.

For each of the visual effects identified, the mitigation approaches discussed above were evaluated for applicability and likelihood of success. In some cases, the combination of existing landscape characteristics and structure prominence and visibility resulted in effects that could not be mitigated. However, where mitigation opportunities were identified, they are discussed.

4.19.2 Applicant Measures

- The following Applicant Measures (AMs) have been incorporated as design features of the proposed project (and all action alternatives) and shall be implemented to reduce adverse impacts associated with the project. In some cases, mitigation measures further clarify or expand on AM reporting requirements, timing of implementation, or other details where appropriate. Where there is a conflict between provisions of the mitigation measures imposed and the following AMs, the mitigation measures take precedence. Equipment other than the solar panels will have a non-reflective surface and neutral colors to minimize their visual impacts to the extent practical.
- A paint color acceptable to the BLM will be used on all facilities that can be painted to blend the facility with the existing surroundings.
- Nighttime lighting will be limited to areas required for operation, safety, or security, and will be directed or shielded from major roadways or possible outside observers.

- Lighting at high illumination areas not required on a continuous basis will be controlled by switches, motion detectors, etc to light the areas only when required.
- Exterior lights will be hooded and lights will be directed onsite so that light or glare will be minimized.
- Low-pressure sodium lamps and fixtures of a non-glare type will be specified.

4.19.3 Alternative 1 – No Action (No Plan Amendment)

Under Alternative 1, the DHSP would not be approved by the BLM, and the BLM would not amend the CDCA Plan 1980, as amended. As a result, no solar energy project would be constructed on the proposed project site, and the BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan. Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no ground disturbance. As a result, no adverse visual effects associated with the DHSP would occur.

4.19.4 Alternative 2 – No Project Alternative (with Plan Amendment to Find the Site Suitable for Solar Energy Development)

Under Alternative 2, the DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site available for future solar energy development. As a result, the DHSP would not be constructed on the project site and BLM would manage the site consistent with the amended land use designation in the CDCA Land Use Plan. No impacts from the DHSP would occur.

4.19.5 Alternative 3 – No Project Alternative (with Plan Amendment to Find the Site Unsuitable for Solar Energy Development)

Under Alternative 3, the DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site unavailable for future solar energy development. As a result, the DHSP would not be constructed on the project site and BLM would manage the site consistent with the amended land use designation in the CDCA Land Use Plan. No impacts from the DHSP would occur.

4.19.6 Alternative 4 – Proposed Solar Project

The proposed solar facility would include the construction and operation of a 150 MW photovoltaic solar facility on approximately 1,208 acres.

Construction

Construction of Alternative 4 would cause temporary visual effects due to the presence of equipment, materials, and workforce. These effects would occur throughout the development area. Construction would involve the use of cranes, heavy construction equipment, temporary storage and office facilities, and temporary laydown/staging areas. Construction would include site clearing and grading, construction of the actual facilities, and site cleanup and restoration. Visible traffic would also increase along Kaiser Road, SR-177, and I-10. Grading activities have the potential to generate dust clouds, which can be visually distracting if not controlled properly

as required in Mitigation Measure VR-1 (see mitigation measures at the end of this sub-section). Construction activities would be visible from Kaiser Road, SR-177, I-10 BLM recreational access roads, the community of Lake Tamarisk, Desert Lily Sanctuary Area of Critical Environmental Concern (ACEC), portions of Joshua Tree Wilderness in Joshua Tree National Park, and the Chuckwalla Mountains Wilderness. Throughout the construction period, the industrial character of the activities would constitute adverse visual effects when viewed from the project vicinity and all of the KOPs. However, the majority of construction activities and equipment brought onto the project site would be temporary in nature, although the vast majority of the area disturbed by construction would eventually be occupied by project facilities (see discussion of Operation and Maintenance impacts below). Those areas of temporary disturbance of the soil surface (characterized by high color, line, and texture contrasts) associated with construction would remain visible from various vantage points for some period after the conclusion of construction activities because revegetation of areas in the desert region where the project is located is difficult and generally of limited success. These longer duration construction-related impacts would be addressed by Mitigation Measure VR-2, which requires successful revegetation of temporarily disturbed areas. It is also anticipated that some construction activity would take place at night, which would result in adverse night lighting visual effects. In order to ensure that substantial adverse construction lighting effects do not occur, Mitigation Measure VR-6 would reduce effects associated with night lighting by requiring strict lighting specifications and controls and operating parameters.

In addition to the direct visual resource impacts, the construction of Alternative 4 would also result in one indirect visual effect. Specifically, visual effects related to an increase in traffic on roadways beyond the immediate project vicinity during construction. Although there would be an increase in vehicle trips on regional roads associated with construction related vehicles, it is not expected that, in the context of existing non-project related traffic, the increased traffic would be noticed by the casual observer, and therefore, the resulting visual effect would not be substantial.

Operation and Maintenance

An analysis of operation and maintenance effects was conducted for the view areas represented by KOPs 1 through 4 (Figure 3.19-3), which were selected for in-depth visual analysis. The results of the effect analysis are discussed below by KOP and presented in the Visual Analysis Summary Table included as Appendix G-2. Contrast Rating Data Sheets are provided in Appendix G-4.

Effects Context for Joshua Tree Wilderness and National Park

The effects discussed below under KOPs 1 and 2 are representative of the visual effects that would be experienced from similar locations, including both lower elevation and elevated viewing opportunities, in the surrounding perimeters of Joshua Tree Wilderness and National Park. While much of this area of the national park is more remote, less accessible, and less used relative to the more accessible regions of the park to the west and north, the area is still an important destination for its geological, backcountry wilderness, and dark sky values. Yet, with increasing distance from the Alternative 4 solar facility site, project effects become less discernible. The lower elevation viewpoint at KOP 1 illustrates the effect of perspective foreshortening, which reduces the apparent size and scale of the project due to a low elevation difference and the

narrow angle of view. At these greater viewing distances, it is at the elevated viewpoints (illustrated by KOP 2) where the greater visual effect would occur as the increased elevation causes the size and shape of the project area to become increasingly apparent, along with its associated form, line, and color visual contrasts.

As illustrated in the viewshed maps presented as Figures 3.19-1A (solar panels) and 3.19-1B (transmission structures), the number of impacted National Park acres within the DHSP viewshed totals 37,508 acres, which represents approximately 4.8 percent of the park's 776,083 total acres. Approximately two-thirds of the impacted acres (25,314 acres) would have views of the solar facility. Furthermore, of the 37,508 impacted park acres, only 7,344 acres, or slightly less than one percent of the park's total acreage, would be within the foreground/middleground viewing distance zone of five miles or less. Another 27,821 acres, or approximately 3.6 percent of the park's total acreage, would be in the background distance zone of 5 to 15 miles. The remaining 2,343 impacted park acres (approximately 0.3 percent of the total park acreage) would be more than 15 miles from the Alternative 4 site. While the total number of impacted park acres is small relative to the whole, all of the park's acreage is important from both a public visitation and sensitivity standpoint and resource protection standpoint. Thus, visual effects on wilderness and parklands should be avoided or minimized where possible. Effective implementation of the mitigation measures presented below will be important.

Of particular concern is Alternative 4's potential effect on the Dark Sky resource that Joshua Tree National Park is known for throughout the National Park System. It is estimated that only approximately 10 percent of the population of the United States is able to see the night sky in its natural, unpolluted state. Joshua Tree National Park is noted for initiating partnerships with surrounding communities in an effort to limit light from spilling over park boundaries. To serve this increasing public interest, Joshua Tree National Park offers a variety of Night Sky programs. In the immediate solar facility region, Dark Sky visitors access the east end of the Pinto Basin at the access gate adjacent to KOP 1. Because any light source in the desert contributes to ambient light pollution and all light sources are adversely cumulative in terms of the effect on human darkness adaptation and the dwindling availability of Dark Sky observation areas, it is essential that substantial steps be taken to ensure that additional night sky light pollution does not occur from implementation of Alternative 4. To accomplish this, effective implementation of Mitigation Measure VR-6, which would reduce adverse visual effects associated with night lighting by requiring strict lighting specifications and controls and operating parameters, would be essential.

KOP 1 – Joshua Tree Wilderness – Eagle Mountains

Figure 4.19-1A presents the existing view from KOP 1 in Joshua Tree Wilderness. The view is to the south from a low ridge at the northeast extent of the Eagle Mountains, at the north end of Chuckwalla Valley. The view captures a majority of the northern Chuckwalla Valley backdropped by the rugged, horizontal form of the Chuckwalla Mountains and Wilderness. Figure 4.19-1B presents a visual simulation that depicts the addition of Alternative 4. As shown in the simulation, the solar facility would appear small in scale relative to the panoramic landscape and result in the introduction of barely discernible built structures that, at an approximately eight-mile viewing distance, would appear as a low, narrow, light gray to tan-colored, horizontal band along the valley floor (for the solar farm), and faintly visible, vertical structural forms (for the transmission structures). Although the solar facility would be centrally located in the field of view from KOP 1, the solar facility structures would not be perceived as prominent features in

the landscape when viewed from these more distant, lower elevation viewpoints within Joshua Tree Wilderness (and National Park), as represented by KOP 1. View impairment of the valley floor or other background landforms and natural features would be minimal. Although the view from this and similar distant view locations would be static, offering extended view durations, these views also have the potential to be partially obscured by poor atmospheric conditions, such as haze.

The fairly indistinct low, horizontal form and line of Alternative 4 would result in weak degrees of structural visual contrast for form, line, color and texture relative to the natural features of the existing landscape. The most notable characteristic of the development would be the color contrast resulting from the reflection of light off the solar panel structural supports (from this viewing angle, the solar panels would be tilted toward the south, away from this viewpoint) and the lighter color of the graded soils. The resulting overall visual change caused by Alternative 4 would be low and would not substantially degrade the existing visual character or quality of the landscape as viewed from KOP 1 and other similar more distant, lower elevation vantagepoints in Joshua Tree Wilderness and National Park. Although the resulting visual effect would be adverse (see discussion below under Section 4.19.16 CEQA Considerations), the low level of change would be allowed under the Interim VRM Class IV management objective. Furthermore, Alternative 4 would retain the existing character of the landscape and would not attract the attention of the casual observer. It is anticipated that the apparent color contrast of the facilities and graded surfaces can be further reduced through effective implementation of Mitigation Measures VR-2 (Revegetation), VR-3 (Project Design to Reduce Visual Contrast), and VR-4 (Surface Treatment), as discussed below.

KOP 2 – Joshua Tree Wilderness – Coxcomb Mountains

Figure 4.19-2A presents the existing view from KOP 2 in Joshua Tree Wilderness along the western flank of the Coxcomb Mountains, northeast of the solar facility site. The view is to the southwest from an elevated vantage point overlooking the predominantly natural appearing northern portion of Chuckwalla Valley backdropped by the rugged, horizontal to angular forms of the Chuckwalla Mountains and Wilderness (to the south and southwest) and Eagle Mountains (to the west). Figure 4.19-1B presents a visual simulation that depicts the addition of Alternative 4. Similar to KOP 1, from this viewing angle, the solar panels would be tilted toward the south, away from this viewpoint. As shown in the simulation, the solar facility would result in the introduction of a large-scale complex of built structures and graded surfaces forming a spatially and visually prominent series of geometric patterns on the valley floor, that would contrast with the predominantly natural appearance of the northern Chuckwalla Valley landscape and background mountains.

The solar facility site would be centrally located within the field of view from this location and view impairment of the valley floor would be noticeable. The view from this and similar locations within the Wilderness would be static, offering extended view durations. At this approximate 4-mile viewing distance, poor atmospheric conditions (haze) would have less of an effect on facility visibility than for more distant views represented by KOP 1. The light-tan color of the graded soils would result in a moderate degree of visual contrast relative to the darker earth-tone colors of the surrounding landforms. The relatively prominent, hard lines associated with the new vegetation demarcations would result in a moderate degree of visual contrast for line.

The prominent geometric patterns of the panel arrays would result in strong form contrast and moderate to strong line contrast with the naturally irregular landforms and lines of the existing landscape. The gray color and reflective characteristics of the panel support structures would contribute to the moderate color contrast with the existing darker grey-greens, tans and reddish hues of the foreground/middleground landscape.

The solar facility, with its prominent geometric patterns, would not repeat the basic elements of the existing natural features in the landscape (rugged and coarse valley floor punctuated with irregular distributions of vegetation clumps and individuals, backdropped by the jagged and angular Coxcomb and Palen mountains). As viewed from this elevated location in Joshua Tree Wilderness, Alternative 4 would not retain the existing character of the landscape and would attract the attention of the casual observer. However, the resulting moderate-to-high level of change would be allowed under the Interim VRM Class IV management objective. Even though the resulting visual effect would be substantial and adverse, it is anticipated that the apparent color contrast of the facilities and graded surfaces can be reduced somewhat through effective implementation of Mitigation Measures VR-2 (Revegetation), VR-3 (Project Design to Reduce Visual Contrast), and VR-4 (Surface Treatment), as discussed below.

KOP 9 – Joshua Tree Wilderness at the eastern-most extent of the Eagle Mountains – Alternatives 4, 5, 6, and 7

Appendix G5 presents a time-lapse visual simulation that depicts the view of the Desert Harvest tracking solar panels throughout a day as the panels articulate from east to west, as viewed from KOP 9 in Joshua Tree Wilderness, approximately five mile to the west of the project site. Also shown in the simulation is the substantially larger Desert Sunlight solar project, which is located immediately north of the Desert Harvest Project (to the left in the simulation). This view is to the east toward the project site from a portion of Joshua Tree Wilderness at the eastern-most extent of the Eagle Mountains. As shown in the simulation, the Desert Harvest panels track the sun throughout the day and there is no noticeable glare or glint off the panels that is visible from KOP 9. During the morning hours, the brighter band of color that creates a “lake effect” and the relatively brief episode of reflected sun that does occur (approximately 26 seconds into the video) is actually from the adjacent Desert Sunlight fixed tilt solar panels. Up until just before midday, the view from KOP 9 is capturing the backside of the Desert Harvest tracking panels, which is why they appear darker relative to the Desert Sunlight solar field. At approximately mid-day, the Desert Harvest panels are in an approximate horizontal position and the sun has already reached its position due south (to the right out of the field of view). In the afternoon and evening when the front of the Desert Harvest solar panels would be visible from KOP 9, the panels are essentially reflecting the color hues of the background mountains and sky. What the time-lapse simulation shows is that the Desert Harvest tracking panels would exhibit minimal to no perceptible glare or glint as viewed from KOP 9. Although this level of change would be allowed under the Interim VRM Class IV management objective, implementation of Mitigation Measures VR-2 (Revegetation), VR-3 (Project Design to Reduce Visual Contrast), and VR-4 (Surface Treatment) would still be required. This determination is applicable to all of the solar field alternatives (4, 5, 6, and 7).

KOP 3 – Kaiser Road in the Immediate Project Vicinity

Figure 4.19-3A presents the existing view to the east from KOP 3 on Kaiser Road in the immediate vicinity of Alternative 4. The view captures a central portion of the northern Chuckwalla Valley backdropped by the southern extent of the Coxcomb Mountains and the more distant Palen Mountains. Figure 4.19-3B presents a visual simulation that depicts a portion of the solar facility. As shown in the simulation, the solar facility would result in the introduction of visually prominent built structures into a foreground/middleground landscape generally lacking similar built features of industrial or technological character. The solar facility would appear as prominent horizontal and geometric features with distinct horizontal lines associated with specific panel arrays, development units, and vegetative demarcations from graded surfaces. The resulting form and line contrast of the solar panels would be moderate-to-strong relative to the natural character of the existing landscape with its rugged horizontal to angular forms and irregular lines. The apparent color of the solar panels would vary depending on viewpoint location, view orientation, sun angle, time of day, and meteorological conditions. Apparent color could range from bluish and bluish-gray hues (as shown in the simulation), to brighter light grays, to medium dark gray, and even black when directly facing a panel array and viewing north. The various colors would result in moderate degrees of visual contrast relative to the lighter earthtones and muted greens of the existing landscape. Similarly, the smooth industrial surfaces and textures of the solar arrays would appear out of place in this rugged desert landscape with the existing matte to granular textures of rock, soil, and vegetation. Also, the solar arrays would cause partial view blockage of the Chuckwalla Valley floor. These contrasts would substantially degrade the existing visual character and quality of the Alternative 4 site and its surrounding landscape.

The solar facility with its prominent horizontal geometric structural forms and lines and smooth industrial surfaces would not repeat the basic elements of the existing natural features in the landscape (rugged and coarse valley floor punctuated with irregular distributions of vegetation clumps and individuals, backdropped by the jagged and angular Coxcomb and Palen mountains). Also, the solar facility would constitute a co-dominant to dominant feature in the landscape, depending on proximity to the development area, view orientation, and presence or absence of intervening vegetation, thus, attracting the attention of the casual observer. However, the resulting overall moderate-to-high level of change would be allowed under the applicable Interim VRM Class IV management objective (see the VRM Contrast Rating form for KOP 3 in Appendix G-4).

Although the resulting visual effect would be substantial when viewed from KOP 3 and other at-grade vantage points in relatively close proximity to the Alternative 4 site (see discussion below under Section 4.19.16 CEQA Considerations), it is anticipated that the adverse visual effect could be reduced with the effective implementation of Mitigation Measures VR-2 (Revegetation), VR-3 (Project Design to Reduce Visual Contrast), VR-4 (Surface Treatment), and VR-5 (Vegetative Screening Buffer), as discussed below. Also, effective implementation of Mitigation Measure VR-6 (Night Lighting Control) would be essential to ensure that additional night sky light pollution does not occur from implementation of Alternative 4. Of particular importance is Mitigation Measure VR-5, which calls for the maintenance of a minimum 200-foot wide undisturbed, naturally vegetated buffer along the Alternative 4 perimeters and nearby roadsides. The purpose of the buffer is to provide vegetative screening of the low-profile panel arrays. The minimum 200-foot width of the buffer is necessary given the scarcity of natural vegetation in this

landscape. Although the buffer may not completely screen the Alternative 4 facilities from view (particularly the water tank, O&M facility, substation, and collector poles), the intent is to provide sufficient screening to enable only intermittent views of the predominant photovoltaic arrays, thus reducing the prominence of structural contrast. At present, the more extended view durations of the Alternative 4 site from Kaiser Road can range from approximately 30 seconds to approximately 90 seconds. The vegetative buffer and screening vegetation would break up the visual mass of the arrays, reduce the view durations, and limit the visual access to the solar facility site, thereby helping to reduce the resulting adverse visual effect.

Effects Context for Desert Lily Sanctuary ACEC

The effects discussed below under KOP 4 are representative of the visual effects that would be experienced from various locations within the southern half of the ACEC, which is an important and popular regional destination because of its botanical values. As illustrated in the viewshed maps presented as Figures 3.19-1A (solar panels) and 3.19-1B (transmission structures), the number of potentially impacted ACEC acres within the Alternative 4 viewshed (based on terrain-only modeling) totals 2,049 acres, which represents almost all of the ACEC's 2,055 total acres. Approximately 39 percent of the impacted acres (796 acres) would be within the viewshed of the low-profile Alternative 4 solar facility, all within the foreground/middleground distance zone. (By comparison, approximately 56 percent of the impacted acres (1,141 acres) would be within the viewshed of the high-profile Alternative 7 solar facility, again, all within the foreground/ middleground distance zone.) Given the ACEC's importance from both a public visitation and sensitivity standpoint, visual effects on the ACEC should be avoided or minimized where possible, and effective implementation of the mitigation measures presented below will be important. However, it is important to remember that intervening vegetation, which is not taken into consideration in the digital terrain modeling, would substantially limit views of the solar facility from the ACEC, particularly for the proposed low-profile facility (as discussed below under KOP 4).

KOP 4 – Desert Lily Sanctuary ACEC

Figure 4.19-4A presents the existing view to the west from KOP 4 in the Desert Lily Sanctuary ACEC, just east of SR-177. The view encompasses a portion of the northern Chuckwalla Valley backdropped by the Eagle Mountains. Figure 4.19-4B presents a visual simulation that demonstrates the inability to view the low-profile solar farm and the limited visibility of the more distant transmission line. As shown in the simulation, the Proposed project (indicated by the white arrows) would be screened from view by intervening vegetation. The transmission structures (indicated by the black arrows) are only intermittently visible and appear barely discernible at this viewing distance of approximately 5.5 miles. As a result, neither the solar farm nor the transmission line structures would be perceived as prominent features in the landscape, and view impairment of the valley floor or other background landforms would be minimal. The resulting structural form and line contrast would be weak, and there would be no discernible color or texture contrast when viewed from the Desert Lily Sanctuary ACEC. Also, as viewed from the ACEC, the project would retain the existing character of the landscape and would not attract the attention of the casual observer. The resulting very low level of change would be allowed under the Interim VRM Class IV management objective (see the VRM Contrast Rating form for KOP 4 in Appendix G-4).

This viewpoint analysis is representative of other possible views from the ACEC and illustrates the effectiveness of an intervening vegetative buffer (as required by Mitigation Measure VR-5) in blocking sightlines to the proposed project site from KOP 4. Therefore, the ACEC would not be adversely affected by Alternative 4, and the resulting visual effect would not be substantial (see discussion below under Section 4.19.16 CEQA Considerations). Although no adverse visual effects are expected to occur at the Desert Lily Sanctuary ACEC, Mitigation Measures VR-2 through VR-6 are still required to further mitigate visual effects at this KOP and to reduce the possibility that any unexpected adverse visual effects occur.

Linear Viewpoint Analysis

Section 3.19.2 and Figure 3.19-2 present a linear viewpoint analysis of the solar facility site (not the gen-tie alternative routes) from the three major roadways in the project area – Kaiser Road, SR-177, and I-10. As noted in that analysis, unlike stationary KOP views, transient views, while traveling along roadways, are variable and constantly change depending on viewing angles and the presence of intervening screening. The following paragraphs briefly encapsulate the overall impact on views from the three main roadways by direction of travel.

Northbound Kaiser Road. There are numerous Alternative 4 site viewing opportunities along northbound Kaiser Road; some in close proximity, and some that are more distant; some with unobstructed views, and others that are partially or completely obscured by roadside and intervening vegetation. Project facilities that are visible within the primary cone of vision of travelers on Kaiser Road would be visible for more extended view durations. Facilities that are visible at right angles to the direction of travel would be visible for briefer durations of view. Segments represented by red and orange in Figure 3.19-2 would have the clearest views of the solar facility and would experience the greatest visual impact. KOP 3 is representative of the more proximal views in this category but includes only 35 percent of the total viewing opportunity along northbound Kaiser Road. The remaining 65 percent of northbound Kaiser Road would have limited to no views of the solar facility and would likely not experience substantial visual effects. These less affected road segments are concentrated further south on Kaiser Road in the vicinity of Lake Tamarisk.

Southbound Kaiser Road. Viewing opportunities along southbound Kaiser Road are limited to the road segment immediately adjacent to the Alternative 4 site (90 degree view from the road), and extending north approximately 3.2 miles. Project facilities would be visible for an extended duration of view and within the primary cone of vision of travelers on southbound Kaiser Road for most of this segment as the road converges on the Alternative 4 site, before turning to pass immediately west of the site. Facilities that are visible at right angles to the direction of travel would be visible for a shorter duration of view. Views from all of the southbound segment would be minimally screened (represented by the orange color in Figure 3.19-2) and, for the most part, would have unobstructed views of the solar facility. Therefore, southbound travelers on Kaiser Road approaching from the north would experience a substantial visual impact.

Northbound SR-177. There are numerous opportunities to view the solar site along the first 5.7 miles of northbound SR-177 north of Desert Center (see Figure 3.19-2). However, only the southernmost 1.8 miles of SR-177, closest to Desert Center, would have unobstructed views of the site (represented in red in Figure 3.19-2). This segment would experience substantial visual impact. The more northerly 3.9 miles of SR-177, in closer proximity to the Alternative 4 site,

would have limited to no views of the solar facility (shown in yellow and green in Figure 3.19-2) due to intervening vegetation and structures and would likely not experience substantial visual effects. Similarly, the Desert Lily Sanctuary ACEC, adjacent and at the northern range of views along SR-177, is also exposed to limited Alternative 4 site viewing opportunities due to screening by intervening vegetation. Thus, KOP 4 is also somewhat representative of views along SR-177 in terms of the limited viewing opportunity.

Southbound SR-177. Viewing opportunities along southbound SR-177 are limited to 3.2 miles of road segments with minimal to no site viewing opportunities due to the presence of considerable vegetative screening. Therefore, southbound travelers on SR-177 would not experience a substantial visual impact from the solar facility.

Eastbound I-10. There is considerable viewing opportunity from eastbound I-10 when approaching the vicinity of Desert Center from the west. Of the 9.5 miles of potential solar facility views, 8.5 miles (or 89 percent) have relatively unobstructed views of the solar facility site and would experience substantial visual impact from the solar facility in spite of a greater viewing distance ranging from approximately 5.5 to 11.5 miles. KOP 8A is representative of the solar facility views in this category even though the viewpoint is located on the westbound side of I-10.

Westbound I-10. There is also considerable viewing opportunity along westbound I-10 when approaching the vicinity of Desert Center from the east. Of the 9.3 miles of potential solar facility views, approximately 7.2 miles (or 77 percent) have unobstructed views of the solar facility site and would experience substantial visual impact from the solar facility in spite of a viewing distance ranging from approximately 5.5 to 11 miles. KOP 8A on westbound I-10 is representative of the solar facility views in this category.

Decommissioning

After the end of the solar facility's useful life, it would require decommissioning with the intent of returning the Alternative 4 area to pre-project conditions. However, as of the date of this visual analysis, no Decommissioning Plan has been prepared. Short-term, deconstruction activities would result in visual impacts similar to construction with the visible intrusion of equipment, materials, deconstruction activities, and increased road traffic. Longer-term, even the complete removal of the facility would leave a very prominent visual effect over the entire site due to the strong color and line contrast created between graded, disturbed soil areas and undisturbed soil and vegetated areas absent such unnatural lines of demarcation and color contrasts. In addition, revegetation in this desert region is difficult and generally of limited success. Therefore, visual recovery from land disturbance associated with closure and decommissioning activities would likely occur only over a very long period of time. Mitigation Measure VR-2 requires the project owner to achieve site restoration to the extent feasible, pursuant to a Decommissioning Plan approved by the BLM.

Mitigation Measures

The following mitigation measure shall be implemented to reduce effects related to Construction Impacts.

MM VR-1 **Reduce Construction Related Impacts.** The project owner shall minimize construction related impacts as described below.

- Minimize Vegetation Removal. Only the minimum amount of vegetation necessary for the construction of structures and facilities shall be removed. Topsoil located in areas containing sensitive habitat, to the extent such areas are not already avoided, shall be conserved during excavation and reused as cover on disturbed areas to facilitate re-growth of vegetation.
- Reduce Land Scarring and Vegetation Clearance associated with gen-tie Construction. Vegetation within the gen-tie ROW and ground clearing at the foot of each tower and between towers shall be limited to the clearing necessary to comply with electrical safety and fire clearance requirements.
- Reduce Color Contrast of Land Scars and Graveled Surfaces. Where construction would unavoidably create land scars visible from sensitive public viewing locations, disturbed soils shall be treated with an appropriate material (Eonite, Permeon, or similar). The material shall be approved by the BLM and the intent shall be to reduce the visual contrast created by the lighter-colored disturbed soils with the darker vegetated surroundings. The project owner shall consult with the BLM and/or their authorized representative on a site-by-site basis and obtain written approval prior to the use of any colorants.
- Reduce In-Line Views of Land Scars that would result from construction of gen-tie access roads. Access or spur roads shall be constructed at appropriate angles from the originating, primary travel facilities to minimize extended, in-line views of newly graded terrain. All proposed new access roads shall be evaluated for their visibility from sensitive viewing locations prior to final design. Prior to final design, the project owner shall consult with the BLM and a Designated Biologist to identify the following.
    - The access roads or portions of roads that would be highly visible from sensitive viewing areas.
    - Approximate location and length of alternative access road routes that would replace proposed roads. Define habitat affected and steepness of terrain for consideration of habitat and erosion impacts. The biologist and visual resources specialist shall evaluate whether the overall impacts of the alternate access road are less than that of the original access road design.
    - Areas where “drive and crush” access is a feasible measure to avoid access road scars (i.e., no grading or vegetation removal is required). If this means of access is to be used, the project owner shall define frequency of driving and vehicle types such that a biologist confirms that vegetation would be likely to recover.
    - The project owner shall submit a map and/or table to the BLM for review and approval at least 60 days before the start of construction to document the roads, or portions of roads, that have been evaluated for reduction of in-line views or scars and the proposed resolution for each access road. Resolution options include retaining proposed roads due to greater impacts from alternative routes, use “drive and crush” access, or develop alternate access road routes.

- Prohibit Construction Marking of Natural Features. No paint or permanent discoloring agents shall be applied to rocks or vegetation to indicate survey or construction activity limits.
- Fugitive Dust, Waste, and Trash Control. To minimize fugitive dust on the proposed project site, a dust control plan shall be developed which will place limits on the speed of travel for construction vehicles and will apply dust palliatives to the site, as described in AM-AIR-1 and AM-AIR-6 and in compliance with SCAQMD Rule 403. Furthermore, during construction, all trash and food-related waste shall be placed in self-closing containers and removed weekly as needed from the site

The following mitigation measure shall be implemented to reduce effects related to Grading and Surface Disturbance Impacts.

MM VR-2 **Revegetation.** The project owner shall minimize the amount of ground surface to be disturbed and shall revegetate disturbed soil areas as described below.

- Limit Disturbance Areas. The boundaries of all areas to be disturbed (including staging areas, access roads, and sites for temporary placement of spoils) shall be delineated with stakes and flagging before construction in consultation with the Designated Biologist and BLM's visual specialist. Parking areas and staging and disposal site locations shall be similarly located in areas approved by the Designated Biologist and BLM's visual specialist. All disturbances by project vehicles and equipment shall be confined to the staked and flagged areas.
- Minimize Road Impacts. New and existing roads that are planned for construction, widening, or other improvements shall not extend beyond the staked and flagged limits as described above. All vehicles passing or turning around shall do so within the limits or in previously disturbed areas. Where new access is required outside of existing roads or the construction zone, the route shall be clearly marked (i.e., staked and flagged) before the start of construction in consultation with the Designated Biologist and the BLM's visual specialist.
- Revegetation of Temporarily Disturbed Areas. The project owner shall prepare and implement a Revegetation Plan (as required in Mitigation Measure VEG-5) to restore all areas subject to temporary disturbance to pre-project grade and conditions. Temporarily disturbed areas within the project area include, but may not be limited to, all proposed locations for linear facilities, temporary access roads, construction work temporary lay-down areas, and construction equipment staging areas. Revegetation shall minimize visual effects by re-establishing the pre-existing colors, textures, and forms of the landscape and shall visually integrate the adjacent edges by removing the lines of demarcation. Plantings as part of revegetation along roadways and the boundaries of other disturbed areas shall be irregularly placed with scalloped edges to reduce the hard line visual impact, especially as seen from Kaiser Road and SR-177.

No more than 30 days following the publication of the BLM's Record of Decision/ROW Issuance, whichever comes first, the project owner shall submit to the BLM a final agency-approved Revegetation Plan that has been reviewed and approved by the BLM.

The following mitigation measures shall be implemented to reduce the effects related Project-induced visual contrast. All mitigation measures shall be approved by the BLM or a BLM approved landscape architect prior to construction.

MM VR-3 **Project Design to Reduce Visual Contrast.** The project owner shall use proper design fundamentals to reduce the visual contrast to the characteristic landscape. These include proper siting and location; reduction of visibility; repetition of form, line, color (see Mitigation Measure MM VR-4) and texture of the landscape; and reduction of unnecessary disturbance. The project owner shall provide to the BLM for review and approval, a draft Project Design Plan describing the siting, placement and other design considerations to be employed to minimize project contrast. The draft plan must explain how the design will minimize visual intrusion and contrast by blending the earthwork, vegetation manipulation and facilities with the landscape. The draft plan shall be submitted to BLM for approval at least 30 days prior to (a) ordering the first structures that are to be color-treated during manufacture, or prior to construction of any of the facility components, whichever comes first. If the BLM notifies the project owner that revisions to the plan are needed before the plan can be approved, within 30 days of receiving that notification, the project owner shall prepare and submit for review and approval a revised plan. Design strategies to address these fundamentals shall be based on the following factors.

- Earthwork. Select locations and alignments that fit into the landforms to minimize the sizes of cuts and fills.
- Vegetation Manipulation. Use existing vegetation to screen the development from public viewing. Feather and thin the edges of cleared areas and retain a representative mix of plant species and sizes.
- Gen-tie Structures. Minimize the number of gen-tie structures and combine different activities in one structure where possible. Use natural, self-weathering materials and chemical treatments on surfaces to reduce color contrast. Bury all or part of the structure. Use natural appearing forms to complement the characteristic landscape. Screen the structure from view by using natural landforms and vegetation. Reduce the line contrast created by straight edges. Use road aggregate and concrete colors that match the color of the characteristic landscape surface. Co-locate facilities within the same disturbed corridor.
- Reclamation and Restoration. Blend the disturbed areas into the characteristic landscape including gen-tie access roads and disturbed areas created during solar facility perimeter fence installation. Replace soil, brush, rocks, and natural debris over these disturbed areas. Newly introduced plant species shall be of a form, color, and texture that blend with the landscape.

MM VR-4 **Surface Treatment of Project Structures/Buildings**. The project owner shall treat the surfaces of all project structures and buildings visible to the public such that: a) their colors minimize visual contrast by blending with the characteristic landscape colors; b) their colors and finishes do not create excessive glare; and c) their colors and finishes are consistent with local policies and ordinances. The PV structure frame and connection pins must be properly treated during the manufacturing process to avoid any reflective properties. The transmission structures and conductors shall be non-specular and nonreflective, and the insulators shall be nonreflective and nonrefractive. The project owner shall consider the use of special galvanizing treatments or post manufacture application of chemical treatments (such as Natina Steel) to ensure that transmission structures are sufficiently dulled and non-reflective and of the appropriate color to blend effectively with the surrounding landscape. The project owner shall comply with BLM requirements regarding appropriate surface treatments for project elements.

The project owner shall provide to the BLM for review and approval, a draft Surface Treatment Plan describing the application of colors and textures to all new facility structures, buildings, walls, fences, and components comprising all facilities to be constructed. The draft Surface Treatment Plan must explain how the design will reduce glare and minimize visual intrusion and contrast by blending the facilities with the landscape. The draft plan shall be submitted to BLM for approval at least 30 days prior to (a) ordering the first structures that are to be color-treated during manufacture, or prior to construction of any of the facility components, whichever comes first. If the BLM notifies the project owner that revisions to the plan are needed before the plan can be approved, within 30 days of receiving that notification, the project owner shall prepare and submit for review and approval a revised plan. The draft Surface Treatment Plan shall include the following.

- Specification, and 11” x 17” color simulations at life-size scale, of the treatment proposed for use on project structures, including structures treated during manufacture.
- A list of each major structure, building, tower and/or pole, and fencing specifying the color(s) and finish(es) proposed for each (colors must be identified by name and by vendor brand or a universal designation).
- Two sets of brochures and/or color chips for each proposed color.
- A detailed schedule for completion of the treatment.
- A procedure to ensure proper treatment maintenance for the life of the project.

Until the project owner receives notification of approval of the Surface Treatment Plan by the BLM, the project owner shall not specify to the vendors the treatment of any buildings or structures treated during manufacture or perform the final treatment on any buildings or structures treated on site. Additionally, construction activities shall not start until the BLM’s approval of the plan has been received.

Within 14 days following the completion of treatment on any facility component, the project owner shall notify the BLM that the component (array, structure, or building) is ready for inspection.

MM VR-5 **Screening Vegetation Buffer**. The project owner shall maintain a minimum 200-foot wide undisturbed, naturally vegetated buffer along Kaiser Road where the solar array would be adjacent to the road. The purpose of the buffer is to provide adequate vegetative screening of the low-profile panel arrays and partial screening of the high-profile arrays. The minimum 200-foot width of the buffer is necessary given the relatively low density of natural vegetation in this landscape. Although the buffer may not completely screen the proposed project site from view, the intent is to provide sufficient screening to enable only intermittent views of the arrays, thus reducing the prominence of structural contrast.

No fewer than 30 days prior to the start of construction, the project owner shall provide to the BLM for review a draft Screening Plan that illustrates the undisturbed area. Following the BLM's review and comment period, and no fewer than 15 days prior to the start of construction, the project owner shall provide the final Screening Plan to the BLM.

The following mitigation measure shall be implemented to reduce the adverse effects of night lighting (skyglow, glare, light trespass, light clutter) on the regional Dark Sky resource.

MM VR-6 **Night Lighting Control.** Due to the project's location within a nationally significant Dark Sky resource area, night lighting is to be avoided where possible and minimized under all circumstances. To accomplish this, the project owner shall prepare a Night Lighting Management Plan that incorporates the following general principles and specifications.

- Always-on security lighting is to be limited to one low-wattage, fully shielded, full cutoff light fixture at the main entrance to the facility. All other security lighting is to be motion activated only through the use of passive infrared sensors and controlled as specific zones such that only targeted areas are illuminated. No other lighting is to be utilized on a nightly basis when the facility is not occupied.
- Lighted nighttime maintenance is to be minimized or avoided as a routine practice and should only occur during emergencies. In particular, night-lighted maintenance activities shall be avoided during primary Dark Sky hours, meaning no maintenance lighting shall be used later than two hours after sunset and no earlier than two hours before sunrise.
- If a nighttime maintenance activity is anticipated to be necessary, the scheduling of that activity must be coordinated with the Joshua Tree National Park Night Sky Program Manager to ensure that the nighttime maintenance activity does not occur during a scheduled Night Sky Program.
- Under all circumstances, the use of night lighting is to be absolutely minimized.

Consistent with safety and security considerations, the project owner shall design and install all permanent exterior lighting and all temporary construction lighting such that: a) lamps and reflectors are not visible from beyond the solar farm site including any off-site security buffer areas; b) lighting shall not cause excessive reflected glare; c) direct lighting shall not illuminate the nighttime sky, except for required FAA aircraft safety lighting (which shall be an on-demand, audio-visual warning system that is triggered by radar technology if technically and economically feasible, and if allowed by the FAA); d) illumination of the Proposed project and its immediate vicinity shall be minimized; e) skyglow caused by Project lighting will be avoided; and f) the Night Lighting Management Plan (see below) shall comply with local policies and ordinances. All permanent light sources shall be below 3,500 Kelvin color temperature (warm white) and shall be full cutoff fixtures.

No fewer than 30 days prior to the start of construction, the project owner shall submit to the BLM and National Park Service (NPS) Joshua Tree National Park for review and approval a draft Night Lighting Management Plan. Following the BLM's and NPS' review of the draft Night Lighting Management Plan, and not fewer than 15 days prior to the start of construction, the project owner shall submit to the BLM and NPS for review and approval, a final Night Lighting Management Plan. Construction activities shall not start until BLM's and NPS's approvals of the plan have been received. The Night Lighting Management Plan shall include the following.

- Specification that LPS or amber LED lighting will be emphasized, and that white lighting (metal halide) would: a) only be used when necessitated by specific work tasks; b) would not be used for dusk-to-dawn lighting; and c) would be less than 3500 Kelvin color temperature.
- Specifications and maps of all lamp locations, orientations, and intensities including security, roadway, and task lighting.
- Specifications of each light fixture and each light shield.
- Total estimated outdoor lighting footprint expressed as lumens or lumens per acre.
- Detailed list of anticipated circumstances and activities that would require night lighting including the expected frequency of the activity, the duration of the activity, and the expected amount of lighting that would be necessary for that activity.
- Definition of the threshold for substantial contribution to light pollution in Joshua Tree National Park, in coordination with the Night Sky Program Manager (see below).
- Specifications on the use of portable truck-mounted lighting.
- Lighting design shall consider setbacks of proposed project features from the proposed project boundary to help satisfy the lighting mitigation requirements.

- Light fixtures that could be visible from beyond the proposed project boundary shall have cutoff angles sufficient to prevent lamps and reflectors from being visible beyond the proposed project boundary, including security lighting.
- Specification of motion sensors and other controls to be used, especially for security lighting such that lights operate only when the area is occupied.
- Surface treatment specification that will be employed to minimize glare and skyglow.
- Results of a Lumen Analysis (based on final lighting plans), in consultation with the NPS Night Sky Program Manager (Chad Moore – [970] 491-3700), in order to determine the extent of night lighting exposures on the surrounding NPS lands. If the lighting exposure on NPS lands exceeds the allowable threshold (which is to be determined in consultation with the NPS Night Sky Program Manager), additional control measures shall be instituted to reduce the lighting exposures to levels below the action threshold.
- Documentation that the necessary coordination with the NPS Night Sky Program Manager has occurred.

Residual Impacts and Unavoidable Adverse Effects

Land scarring and vegetation clearance. It is expected that even with effective implementation of Mitigation Measures VR-1 and VR-2, the residual effects associated with land scarring and vegetation clearance from Alternative 4 would remain for many years given the difficulty of successful revegetation in an arid environment. This would result in an unavoidable, long-term, adverse effect to visual resources.

Structural visual contrast. It is expected that, given the scale of the solar facility and the availability of considerable visual access to the Alternative 4 area, even with effective implementation of Mitigation Measures VR-2, VR-3, VR-4, and VR-5, the residual effects associated with introduced visual contrast from installation of Alternative 4 would remain for the life of the project. This would result in an unavoidable, long-term, adverse effect to visual resources.

Adverse effect on scenic vistas. It is expected that, given the scale of Alternative 4 and the availability of elevated viewing perspectives from surrounding wilderness areas that overlook the northern Chuckwalla Valley, even with effective implementation of Mitigation Measures VR-2, VR-3, VR-4, and VR-5, the residual effect associated with the prominence of Alternative 4 and the introduction of industrial character and structural visual contrast to the field of view from backcountry scenic vistas would still result in substantial adverse visual effects. This would result in an unavoidable, long-term adverse effect to visual resources.

Inconsistency with public policy. Although the levels of change caused by Alternative 4 would be allowed under the Interim VRM Class IV management objective, the solar facility would be inconsistent, after mitigation, with the following Riverside County General Plan policies: LU 4.1, LU 13.1, LU 13.3, LU 13.5, LU 13.8, LU 20.1, LU 20.2, LU 20.4, DCAP 2.3, DCAP 9.1, and DCAP 10.1.

4.19.7 Alternative 5 – Solar Project Excluding WHMA

Alternative 5 would remain in the same location as Alternative 4 and would use the same project boundaries as Alternative 4 except that it would exclude the portion of the site which is within the Palen-Ford Wildlife Habitat Management Area (WHMA) as shown on Figure 2-9, Alternative 5: Solar Project Excluding WHMA.

Construction

Construction effects for this alternative would be the same as described for Alternative 4. The reader is referred to Section 4.19.6 for a discussion of construction effects.

Operation and Maintenance

Operation and maintenance effects for this alternative would essentially be the same as for Alternative 4. There would be no discernible difference between Alternative 5 and Alternative 4 when viewed from any of the KOPs. Therefore, the KOP analyses, contrast ratings, and conclusions presented for Alternative 4 are applicable to Alternative 5. The reader is referred to Section 4.19.6 for a discussion of operation and maintenance effects that would be experienced under both Alternative 4 and Alternative 5.

Decommissioning

Decommissioning effects for this alternative would be the same as described for Alternative 4. The reader is referred to Section 4.19.6 for a discussion of decommissioning.

Mitigation Measures

Mitigation Measures VR-1 through VR-6 would also apply to Alternative 5. The reader is referred to Section 4.19.6 for a complete description of these measures.

Residual Impacts and Unavoidable Adverse Effects

The residual impacts and unavoidable adverse effects of Alternative 5 would be the same as for Alternative 4. The reader is referred to Section 4.19.6 for a complete discussion of these effects.

4.19.8 Alternative 6 – Reduced Footprint Solar Project

Alternative 6 would remain in the same location as Alternative 4 and would use the same project boundaries as Alternative 4 except that it would exclude the 155-acre southern parcel and a small portion of the northern parcel that contains a sensitive plant species, crucifixion thorn, as shown on Figure 2-10, Alternative 6: Reduced Footprint Solar Project.

Construction

Construction effects for this alternative would be the same as described for Alternative 4 above. The reader is referred to Section 4.19.6 for a discussion of construction effects.

Operation and Maintenance

Operation and maintenance effects for this alternative would essentially be the same as for Alternative 4. Therefore, the KOP analyses, contrast ratings, and conclusions presented for Alterna-

tive 4 are applicable to Alternative 6. The reader is referred to Section 4.19.6 for a discussion of operation and maintenance effects that would be experienced under both Alternative 4 and Alternative 6. The only location(s) from which a noticeable difference between Alternative 4 and Alternative 6 would be perceived would be from portions of Kaiser Road. With the elimination of the smaller southern development area immediately adjacent to Kaiser Road, the solar facility would have the potential to become noticeably less visible to travelers on Kaiser Road. Specifically, the key to minimizing visibility of the low profile solar arrays is to maintain a vegetation screening buffer of sufficient depth between the solar facility and the at-grade viewing locations. By eliminating the (southern) development area closest to viewers on Kaiser Road, it should be easier to maintain an adequate screening buffer (of at least 200 feet) for the project overall, as required in Mitigation Measure VR-5. As a result, Alternative 6 would have fewer visual impacts relative to either Alternative 4 or Alternative 5. See also the relevant discussion of linear viewpoint effects in Section 3.19.1 and 4.19.6.

Decommissioning

Decommissioning effects for this alternative would be the same as described for Alternative 4. The reader is referred to Section 4.19.6 for a discussion of decommissioning.

Mitigation Measures

Mitigation Measures VR-1 through VR-6 would also apply to Alternative 6. The reader is referred to Section 4.19.6 for a complete description of these measures.

Residual Impacts and Unavoidable Adverse Effects

The residual effects and unavoidable adverse effects of Alternative 6 would be the same as for Alternative 4. The reader is referred to Section 4.19.6 for a complete discussion of these effects.

4.19.9 Alternative 7 – High-Profile Reduced Footprint Solar Project

Alternative 7 would be constructed within the same project boundaries as Alternative 6, which is to say the same location and boundaries as Alternative 4 except that it would exclude the 155-acre southwestern parcel and a small portion of the northern parcel that contains a sensitive plant species, crucifixion thorn, as shown on Figure 2-10, Alternative 6: Reduced Footprint Solar Project. Alternative 7 would use high-profile single-axis tracking panels that would have a total height of 15 feet.

Construction

Construction effects for this alternative would be the same as described for Alternative 4 above. The reader is referred to Section 4.19.6 for a discussion of construction effects.

Operation and Maintenance

An analysis of operation and maintenance effects was conducted for the view areas represented by KOPs 1A, 3A, and 8A (Figure 3.19-3), which were selected for in-depth visual analysis. The results of the effect analysis are discussed below by KOP and presented in the Visual Analysis Summary Table included as Appendix G-2. Contrast Rating Data Sheets are provided in Appendix G-4.

Effects Contexts for Joshua Tree Wilderness and National Park and Desert Lily Sanctuary ACEC

The effects contexts for Joshua Tree Wilderness and National Park and Desert Lily Sanctuary ACEC would be the same for this alternative as described for Alternative 4. The reader is referred to Section 4.19.6 for a discussion of those effects.

KOP 1A – Joshua Tree Wilderness – Eagle Mountains

Figure 4.19-1A presents the existing view from KOP 1/1A in Joshua Tree Wilderness. The view is to the south from a low ridge at the northeast extent of the Eagle Mountains at the north end of Chuckwalla Valley. The view captures a majority of the northern Chuckwalla Valley back-dropped by the rugged, horizontal form of the Chuckwalla Mountains and Wilderness. Figure 4.19-1C presents a visual simulation that depicts the addition of Alternative 7. As shown in the simulation, Alternative 7 would appear relatively small in scale compared to the panoramic landscape and would result in the introduction of a noticeable horizontal, built feature that, at an approximately eight-mile viewing distance, would appear as a low, narrow, variably-colored, horizontal band along the valley floor. Although Alternative 7 would be centrally located in the field of view from KOP 1A, the solar facility would not be perceived as a prominent feature in the landscape when viewed from these more distant, lower elevation viewpoints within Joshua Tree Wilderness (and National Park), as represented by KOP 1A. View impairment of the valley floor or other background landforms and natural features would be minimal. Although the view from this and similar distant view locations would be static, offering extended view durations, these views also have the potential to be partially obscured by poor atmospheric conditions such as haze.

The noticeable low horizontal form and line of the solar farm and fairly indistinct vertical structural elements of the transmission structures would result in weak degrees of structural visual contrast for form and texture. For line and color, the resulting visual contrast would be weak-to-moderate (relative to the natural character of the existing landscape). The most notable characteristic of the development would be the variable color contrast resulting from the reflection of light off the solar panels. The resulting overall visual change caused by Alternative 7 would be low and would not substantially degrade the existing visual character or quality of the landscape as viewed from KOP 1A and other similar, more distant, lower elevation vantagepoints in Joshua Tree Wilderness and National Park. Although the resulting visual effect would be adverse (see discussion below under Section 4.19.16 CEQA Considerations), the low level of change would be allowed under the Interim VRM Class IV management objective. Furthermore, Alternative 7 would retain the existing character of the landscape though it may attract the attention of the casual observer. It is anticipated that the apparent color contrast of the facilities and graded surfaces can be further reduced through effective implementation of Mitigation Measures VR-2 (Revegetation), VR-3 (Project Design to Reduce Visual Contrast), and VR-4 (Surface Treatment).

KOP 3A – Kaiser Road in the Immediate Project Vicinity

There are numerous viewing opportunities of Alternative 7 along Kaiser Road. Some are in close proximity, and some are more distant. Some are with unobstructed views, and others are partially or completely obscured by roadside and intervening vegetation. Project facilities within the primary cone of vision of travelers on Kaiser Road would be visible for more extended view durations. Facilities that are visible at right angles to the direction of travel would be visible for

shorter view durations. KOP 3A represents a compromise in possible views along Kaiser Road in terms of viewing proximity, angle, and duration and is representative of views along those portions of Kaiser Road where views are only partially obstructed by vegetation (and mostly unobstructed). These areas are shown in orange in Figure 3.19-2 and include approximately 1.5 miles of northbound Kaiser Road (out of six miles of potential Project views) and 4.7 miles of southbound Kaiser Road (out of 4.7 miles of potential solar facility views). Farther south on Kaiser Road, in the vicinity of Lake Tamarisk, views of the solar facility would be either substantially or completely screened by intervening vegetation. The reader is referred to Section 3.19.1 and 4.19.6 for additional discussion of the linear viewpoint analysis for Kaiser Road, which also applies to Alternative 7, even with the difference in panel height between Alternative 7 and the other solar facility action alternatives.

Figure 4.19-3C presents the existing view to the northeast from KOP 3A on Kaiser Road in the immediate solar facility vicinity. The view encompasses the open expanse of a central portion of the northern Chuckwalla Valley backdropped by the Coxcomb Mountains. Figure 4.19-3D presents a visual simulation that depicts a portion of the Alternative 7 solar facility. As shown in the simulation, Alternative 7 would result in the introduction of visually prominent built structures into a foreground/middleground landscape generally lacking similar built features of industrial or technological character. The solar facility would appear as prominent horizontal and geometric features with prominent and distinct horizontal lines associated with specific panel arrays, development units, and vegetative demarcations from graded surfaces. The resulting form contrast of the solar panels would be moderate-to-strong relative to the natural character of the existing landscape with its rugged horizontal to angular forms and irregular lines. The apparent color of the solar panels would vary depending on viewpoint location, view orientation, sun angle, time of day, and meteorological conditions. Apparent color could range from bluish and bluish-gray hues (as shown in the simulation), to brighter light grays, to medium dark gray, and even black when directly facing a panel array and viewing north. The various colors would result in moderate-to-strong degrees of visual contrast relative to the lighter earthtones and muted greens of the existing landscape. The prominent line contrast of the solar panels would be strong. The smooth industrial surfaces and textures of the solar arrays would appear out of place in this rugged desert landscape with the existing matte to granular textures of rock, soil, and vegetation. The resulting texture contrast would be moderate. Also, the solar arrays would cause partial view blockage of the Chuckwalla Valley floor. These contrasts would substantially degrade the existing visual character and quality of the Alternative 7 site and its surrounding landscape.

The solar facility with its prominent horizontal geometric structural forms and lines and smooth industrial surfaces would not repeat the basic elements of the existing natural features in the landscape (rugged and coarse valley floor punctuated with irregular distributions of vegetation clumps and individuals, backdropped by the jagged and angular Coxcomb Mountains). Also, the solar farm would constitute a co-dominant to dominant feature in the landscape depending on proximity to the development area, view orientation, and presence or absence of intervening vegetation, thus attracting the attention of the casual observer. However, the resulting overall moderate-to-high level of change would be allowed under the applicable Interim VRM Class IV management objective (see the VRM Contrast Rating form for KOP 3A in Appendix G-4).

Although the resulting visual effect would be substantial when viewed from KOP 3A and other at-grade vantage points in relatively close proximity to the solar facility site (see discussion

below under Section 4.19.16 CEQA Considerations), it is anticipated that the adverse visual effect could be reduced somewhat with the effective implementation of Mitigation Measures VR-2 (Revegetation), VR-3 (Project Design to Reduce Visual Contrast), VR-4 (Surface Treatment), and VR-5 (Vegetative Screening Buffer). Also, effective implementation of Mitigation Measure VR-6 (Night Lighting Control) would be essential to ensure that additional night sky light pollution does not occur from implementation of Alternative 7. Of particular importance is Mitigation Measure VR-5, which calls for the maintenance of a minimum 200-foot wide undisturbed, naturally vegetated buffer along the project perimeters and nearby roadsides. The purpose of the buffer is to provide some vegetative screening of the high-profile panel arrays. The minimum 200-foot width of the buffer is necessary given the scarcity of natural vegetation in this landscape. Although the buffer would not completely screen the project site from view, the intent is to provide sufficient screening to reduce visibility of the arrays, thus, reducing the prominence of structural contrast. At present, the more extended view durations of the Alternative 7 site from Kaiser Road can range from approximately 30 seconds to approximately 90 seconds. The vegetative buffer and screening vegetation would somewhat break up the visual mass of the alternative, thereby reducing the view durations and limiting the visual access to the Alternative 7 site.

KOP 8A – Westbound I-10 East of Desert Center

As discussed above in Section 3.19.1, there are numerous viewing opportunities of Alternative 7 along westbound and eastbound I-10, which experience variable project visibility due to intervening vegetation and structures, changes in view orientation, and the extent to which the solar facility appears within the primary cone of vision of travelers on I-10. As previously noted, a substantial portion of the approximately 9.3 miles of solar facility views along westbound I-10 experience unobstructed views of the Alternative 7 solar facility (see Figure 3.19-2). Project facilities that are visible within the primary cone of vision of travelers on I-10 would be visible for more extended view durations. Facilities that are visible at right angles to the direction of travel would be visible for shorter view durations. While different viewpoints will experience greater or lesser visual contrast, KOP 8A represents a reasonable compromise in possible views along eastbound I-10 in terms of viewing proximity, duration, and angle of view.

Figure 4.19-8C presents the existing view to the northwest from KOP 8A on westbound I-10, north of the proposed Red Bluff Substation site, approximately 5.75 miles east of Desert Center, and approximately 0.2 mile east of the Alternative E span of I-10. The view captures a central portion of the generally natural appearing northern Chuckwalla Valley north of I-10 and backdropped by the Eagle and Coxcomb mountains. Figure 4.19-8D presents a visual simulation that depicts the Alternative 7 solar facility. Given the openness of the terrain and the availability of unobstructed sightlines, travelers on I-10 would be afforded extended viewing durations (particularly westbound travelers) of the solar facility. Adverse atmospheric conditions (e.g., haze) would somewhat impair views of the solar facility.

As shown in the simulation, the solar facility would appear as a relatively prominent horizontal band along the valley floor. Depending on time of day, orientation of the tracking solar panels, and characteristics of the reflected sky due to atmospheric/weather conditions, light reflecting off the solar panels would cause varying color contrasts with the surrounding earthtone landscape that consists of a blend of greens and tans for vegetation and tans for desert soils that transition to lavender and bluish hues at distance. Lighter reflected colors would create weak color contrast

with the light colored sky. These color contrasts would be noticeable from I-10 but would be somewhat tempered by the approximately 6.75- to 7-mile viewing distance. The more proximal gen-tie transmission line would appear as numerous and visually prominent vertical (tubular steel poles) and curvilinear (conductors) built structures in a landscape generally lacking similar built features of industrial or technological character. The vertical forms of the tubular steel poles would contrast with the prominent horizontal nature of the foreground/middleground valley floor. The light gray of the transmission structures would create moderate visual contrast with the earthtone soil and vegetation colors and weak visual contrast against the lighter sky. To the extent it is perceived, the smooth texture of the structures and industrial surfaces would appear out of place in this rugged desert landscape characterized by the matte to granular textures of rock, soil, and vegetation. However, with the greater viewing distances experienced from I-10 and presented in the simulation, the resulting texture contrast would be weak.

As a result, Alternative 7 facilities would cause moderate-to-strong levels of form and line contrast relative to the natural character of the existing landscape. Color contrast would be moderate, and texture contrast would be weak. Also, the solar array would cause noticeable view blockage of the background Chuckwalla Valley floor and Eagle and Coxcomb mountains. These contrasts would substantially degrade the existing visual character or quality of the surrounding landscape causing a moderate-to-high level of change. However, the resulting moderate-to-high level of change would be allowed under the Interim VRM Class IV management objective (see the VRM Contrast Rating form for KOP 8A in Appendix G-4).

Although the resulting visual effect would be adverse and unmitigable when viewed from KOP 8A and other locations along I-10 (see discussion below under Section 4.19.16 CEQA Considerations), **Mitigation Measures VR-3** (Project Design to Reduce Visual Contrast) and **VR-4** (Surface Treatment) are required to reduce the visual impact to the extent possible.

It should be noted that, at the greater viewing distance illustrated in Figure 4.19-8D (approximately 6.75 miles), the Alternative 4 solar field would appear similar to the Alternative 7 solar field simulated in Figure 4.19-8D and there would be minimal perceptible differentiation between the taller solar panels of Alternative 7 and the shorter solar panels of Alternative 4.

Linear Viewpoint Analysis

The linear viewpoint analysis for this alternative would be the same as described for Alternative 4. The reader is referred to Section 4.19.6 for a discussion of linear viewpoints.

Decommissioning

Decommissioning effects for this alternative would be the same as described for Alternative 4. The reader is referred to Section 4.19.6 for a discussion of decommissioning.

Mitigation Measures

Mitigation Measures VR-1 through VR-6 would also apply to Alternative 7. The reader is referred to Section 4.19.6 for a complete description of these measures.

Residual Impacts and Unavoidable Adverse Effects

The residual effects and unavoidable adverse effects of Alternative 7 would be the same as for Alternative 4. The reader is referred to Section 4.19.6 for a complete discussion of these effects.

4.19.10 Alternative A – No Gen-Tie

Under Alternative A, the ROW for the proposed gen-tie line would not be approved by the BLM. As a result, no gen-tie would be constructed and the BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan. Because there would be no gen-tie line approved for the proposed project, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no ground disturbance. As a result, no adverse visual effects associated with the proposed project would occur.

4.19.11 Alternative B – Proposed Gen-Tie (Shared Towers)

Alternative B would utilize transmission infrastructure developed for the Desert Sunlight solar project by sharing its approved transmission line ROW and infrastructure. However, for the purposes of this EIS, the environmental baseline, also known as the "affected environment," is the existing physical environment in the Chuckwalla Valley, which does yet include any facilities associated with the Desert Sunlight gen-tie as those have not yet been constructed. Therefore, any analysis of the impacts associated with Alternative B relative to the environmental baseline would require an analysis of the impacts of constructing a unique transmission line.

Construction

Construction of Alternative B would cause temporary visual effects due to the presence of equipment, materials, and workforce. These effects would occur throughout the ROW. Construction would involve the use of cranes, heavy construction equipment, vehicles, and temporary laydown/staging areas, and would include site clearing, construction of the support structures, conductor stringing, and site cleanup and restoration of temporary disturbance areas. All of these activities would impact the project vicinity. Visible traffic would also increase along Kaiser Road, SR-177, and I-10. Construction activities have the potential to generate dust clouds, which can be visually distracting. To address those impacts disturbed soils would have to be controlled properly as required in Mitigation Measure VR-1 in order to reduce dust generation. Construction activities would be visible from Kaiser Road, SR-177, I-10, BLM recreational access roads, the community of Lake Tamarisk, Desert Lily Sanctuary ACEC, Joshua Tree Wilderness in Joshua Tree National Park, and the Chuckwalla Mountains Wilderness, and as a result would impact visual resources from those vantage points. Throughout the construction period, the industrial character of the activities would constitute adverse visual effects when viewed from the Alternative B vicinity and KOPs 5, 6, and 8. Much of the area of disturbed soil surfaces (characterized by high color, line and texture contrasts) associated with construction would remain visible from the various viewing vantage points for some period after the conclusion of construction activities because revegetation of areas in the desert region where the gen-tie would be located is difficult and generally of limited success. These longer duration construction-related impacts would be addressed by Mitigation Measure VR-2, which requires successful revegetation of temporarily disturbed areas. It is also anticipated that some construction activity would take place at night, which would result in adverse night lighting visual effects. In order to ensure that adverse construction lighting effects do not occur, Mitigation Measure VR-6 would reduce effects associated with night lighting by requiring strict lighting specifications and controls and operating parameters.

In addition to the direct visual resource impacts, the construction of Alternative B would also result in one indirect visual effect, which is an increase in traffic on roadways beyond the immediate project vicinity during construction. Although there would be an increase in vehicle trips on regional roads associated with construction related vehicles, it is not expected that, in the context of existing non-project-related traffic, the increased traffic would be noticed by the casual observer; therefore, the resulting visual effect would not be substantial.

Operation and Maintenance

An analysis of operation and maintenance effects for this alternative was conducted for the view areas represented by KOP 5 (Figure 3.19-3), which was selected for in-depth visual analysis because it provides a foreground view of Alternative B from Kaiser Road, the nearest public vantage point that also can be considered representative of views from the Lake Tamarisk residential development. None of the other seven representative KOPs would service both viewing populations (travelers on Kaiser Road and residents at Lake Tamarisk). The results of the impact analysis are discussed below and are presented in the Visual Analysis Summary table included as Appendix G-2. A contrast rating analysis was conducted at KOP 5 to determine the level of change that would be caused by implementation of this alternative and the alternative's consistency with the applicable VRM class management objectives. The Contrast Rating Data Sheet is provided in Appendix G-4.

KOP 5 – Kaiser Road in the Immediate Project Vicinity

Figure 4.19-5A presents the existing view to the northwest from KOP 5 on northbound Kaiser Road near the community of Lake Tamarisk. The view captures the open expanse of Chuckwalla Valley west of Kaiser Road. Figure 4.19-5B presents a visual simulation that depicts Alternative B, which would be situated in the immediate foreground within the primary cone of vision of both northbound and southbound travelers on Kaiser Road. As a result, travelers would be afforded extended viewing durations as the transmission line parallels the road. Given the close proximity and relatively large scale of the proposed facility, atmospheric conditions would have minimal to no effect on the viewing experience. Roadside vegetation would partially screen the more distant structures in the parallel view. Eventually, all structures would become visibly prominent as the structures pass into the immediate foreground of views.

As shown in the simulation, the Alternative B gen-tie line would result in the introduction of visually prominent built structures into a landscape generally lacking similar built features of industrial or technological character. The forms of the tubular steel poles and curvilinear conductors within the foreground exhibit strong contrast arising from the horizontal nature and natural character of the foreground, but the contrasting qualities begin to dissipate in the background against the distant Eagle Mountains. The prominent vertical lines of the poles also contrast with the general horizontal, diagonal, and irregular lines in the landscape associated with the valley floor, Kaiser Road, and background ridgelines. The resulting structural form and line contrast would be strong. The colors of the existing landscape are a blend of muted greens and tans for vegetation, tans for desert soils that transition to lavender and bluish hues at distance, and light to medium gray for the pavement of Kaiser Road. The light gray of the transmission structures would create a moderate contrast against the light blue sky and green vegetation and diminishes to a low degree of contrast against the distant middleground and background colors. The overall color contrast would be moderate. The smooth texture of the structures and indus-

trial surfaces would appear out of place in this rugged desert landscape resulting in weak-to-moderate texture contrast with the matte to granular textures of rock, soil, and vegetation. Also, the structures and conductors would cause partial view blockage of the Eagle Mountains and sky.

The Alternative B gen-tie line with its prominent linear, vertical, structural forms and lines and smooth industrial surfaces would not repeat the basic elements of the existing natural features in the landscape (horizontal, rugged and coarse valley floor punctuated with irregular distributions of vegetation clumps and individuals, backdropped by the jagged and angular Eagle Mountains. Also, the transmission line would constitute a foreground co-dominant to dominant feature in the landscape depending on proximity to the gen-tie line, thus attracting the attention of the casual observer. The prominence of the transmission structures would be accentuated by the skylining that would occur where structures visibly protrude above the horizon. Although the facilities would substantially degrade the existing visual character or quality of the surrounding landscape, the resulting high level of change would be allowed under the Interim VRM Class IV management objective (see the VRM Contrast Rating form for KOP 5 in Appendix G-4).

Although the resulting visual effect would be adverse and unmitigable when viewed from KOP 5 and other foreground locations along Kaiser Road (see discussion below under Section 4.19.16 CEQA Considerations), it is anticipated that the adverse visual effect could be somewhat reduced with the effective implementation of Mitigation Measures VR-3 (Project Design to Reduce Visual Contrast) and VR-4 (Surface Treatment).

Decommissioning

After the end of this alternative's useful life, it would require decommissioning with the intent of returning the ROW to pre-project conditions. However, as of the date of this visual analysis, no Decommissioning Plan has been prepared. Short-term, deconstruction activities would result in visual impacts similar to gen-tie construction. Longer-term, even the complete removal of the transmission structures would leave a very prominent visual effect throughout the entire ROW due to the strong color and line contrast created between disturbed soil areas and undisturbed soil and vegetated areas absent such unnatural lines of demarcation and color contrasts. In addition, revegetation in this desert region is difficult and generally of limited success. Therefore, visual recovery from land disturbance associated with closure and decommissioning activities would likely occur only over a very long period of time. However, Mitigation Measure VR-2 requires the project owner to achieve site restoration to the extent feasible, pursuant to a Decommissioning Plan approved by the BLM.

Mitigation Measures

Mitigation Measures VR-1 through VR-6 would also apply to Alternative B. The reader is referred to Section 4.19.6 for a complete description of these measures.

Residual Impacts and Unavoidable Adverse Effects

Land scarring and vegetation clearance. It is expected that even with effective implementation of Mitigation Measures VR-1 and VR-2, the residual impacts associated with land scarring and vegetation clearance would remain for several years given the difficulty of successful revegetation in an arid environment. This would result in an unavoidable, long-term, adverse effect to visual resources.

Structural visual contrast. It is expected that, given the scale of the transmission structures and the availability of considerable visual access to the project study area, even with effective implementation of Mitigation Measures VR-2, VR-3, VR-4, and VR-5, the residual impacts associated with introduced visual contrast from installation of the transmission structures would remain for the life of the project. This would result in an unavoidable, long-term adverse effect to visual resources.

Adverse effect on scenic vistas. It is expected that the transmission structures would result in adverse though not substantial visual effects on the elevated viewing perspectives from surrounding wilderness areas that overlook the northern Chuckwalla Valley given the substantial viewing distances to the transmission line. However, effective implementation of Mitigation Measures VR-2, VR-3, VR-4, and VR-5 is still required to reduce the visual effect to the extent feasible.

Inconsistency with public policy. Although the levels of change caused by the transmission structures would be allowed under the Interim VRM Class IV management objective, they would be inconsistent, after mitigation, with the following Riverside County General Plan policies: LU 4.1, LU 13.1, LU 13.3, LU 13.5, LU 13.8, LU 20.1, LU 20.2, LU 20.4, DCAP 2.3, DCAP 9.1, and DCAP 10.1.

4.19.12 Alternative C – Separate Transmission Towers within Same ROW

Alternative C would parallel the approved Desert Sunlight Solar Farm gen-tie line and would be located on separate towers within the same, or a slightly larger, ROW. However, although the Desert Sunlight Solar Farm gen-tie has been approved, as of the commencement of analysis for this EIS, that gen-tie line has not been constructed. Therefore, the environmental baseline (affected environment) for Alternative C includes the existing physical state of the environment at the time of commencement of analysis (September, 2011), which does not include the Desert Sunlight Solar Farm gen-tie line.

Construction

Construction effects for this alternative would be the same as described for Alternative B above. The reader is referred to Section 4.19.11 for a discussion of construction effects.

Operation and Maintenance

Operation and maintenance effects for this alternative would be the same as described for Alternative B. The reader is referred to Section 4.19.11 for a discussion of operation and maintenance effects.

Decommissioning

Decommissioning effects for this alternative would be the same as described for Alternative B. The reader is referred to Section 4.19.11 for a discussion of decommissioning.

Mitigation Measures

Mitigation Measures VR-1 through VR-6 would also apply to Alternative C. The reader is referred to Section 4.19.6 for a complete description of these measures.

Residual Impacts and Unavoidable Adverse Effects

The residual impacts and unavoidable adverse effects of Alternative C would be the same as for Alternative B. The reader is referred to Section 4.19-11 for a complete discussion of these effects.

4.19.13 Alternative D – Cross-Valley Alignment

From the area of the solar facility, Alternative D would cross Chuckwalla Valley in a southeasterly direction before converging on and then spanning I-10 to connect to the proposed Red Bluff Substation (see Figure 3.19-1).

Construction

Construction effects for this alternative would be the same as described for Alternative B. The reader is referred to Section 4.19.11 for a discussion of construction effects.

Operation and Maintenance

An analysis of operation and maintenance effects for this alternative was conducted for the view areas represented by KOP 6 (Figure 3.19-3), which was selected for in-depth visual analysis because it is the only KOP of the eight representative KOPs that provides a foreground view of Alternative D from I-10, the most highly-traveled road in the project study area. The results of the impact analysis are discussed below and presented in the Visual Analysis Summary table included as Appendix G-2. A contrast rating analysis was conducted at KOP 6 to determine the level of change that would be caused by implementation of this alternative and the alternative's consistency with the applicable Interim VRM class management objectives. The Contrast Rating Data Sheet is provided in Appendix G-4.

KOP 6 – Eastbound I-10 East of Desert Center

Figure 4.19-6A presents the existing view to the northeast from KOP 6 on eastbound I-10, east of Desert Center and approximately 0.8 mile west of the Alternative D span of I-10. The view captures the open expanse of the northern Chuckwalla Valley north of I-10. Figure 4.19-6B presents a visual simulation that depicts Alternative D as it converges on I-10 and passes into the immediate foreground of views and within the primary cone of vision of both eastbound and westbound travelers on I-10. Given the openness of the terrain and the unobstructed sightlines, travelers would be afforded extended viewing durations as the gen-tie line converges on, and spans, the freeway. Given the close proximity and relatively large scale of the gen-tie line, atmospheric conditions would have minimal to no effect on the viewing experience in the vicinity of the span.

As shown in the simulation, this alternative would result in the introduction of visually prominent built structures into a landscape generally lacking similar built features of industrial or technological character. The form of the tubular steel poles and curvilinear conductors within the foreground exhibits strong contrast arising from the horizontal nature of the foreground/ middleground road corridor and valley floor. The prominent vertical lines of the poles also contrast with the general horizontal, diagonal, and irregular lines in the landscape associated with the valley floor, I-10, and background ridgelines. The resulting structural form and line contrast would be strong. The colors of the existing landscape are a blend of muted greens and tans for

vegetation, tans for desert soils that transition to lavender and bluish hues at distance, and light to medium gray for the pavement of I-10. The light gray of the transmission structures creates a weak-to-moderate contrast against the light blue sky, bluish hues of the background mountains, and green vegetation. The poles present a low degree of contrast compared to the foreground gray color of the freeway pavement. The overall color contrast would be weak-to-moderate. The smooth texture of the structures and industrial surfaces would appear out of place in this rugged desert landscape characterized by the matte to granular textures of rock, soil, and vegetation. The resulting texture contrast would also be weak-to-moderate. Also, the structures and conductors would cause partial view blockage of the Palen Mountains and sky. These contrasts would substantially degrade the existing visual character or quality of the surrounding landscape.

The transmission line with its prominent linear, vertical, structural forms and lines, and smooth industrial surfaces would not repeat the basic elements of the existing natural features in the landscape (horizontal, rugged, and coarse valley floor punctuated with irregular distributions of vegetation clumps and individuals, backdropped by the jagged and angular Palen Mountains). Also, the transmission line would constitute a foreground co-dominant to dominant feature in the landscape (depending on proximity to the transmission line), thus attracting the attention of the casual observer. The prominence of the proposed transmission structures would be accentuated by the skylining that would occur where structures visibly protrude above the horizon. However, the high level of change that would result would be allowed under the applicable Interim VRM Class IV management objective (see the VRM Contrast Rating form for KOP 6 in Appendix G-4).

Although the resulting visual effect would be adverse and unmitigable when viewed from KOP 6 and other foreground locations along I-10 (see discussion below under Section 4.19.16 CEQA Considerations), it is anticipated that the adverse visual effect could be somewhat reduced with the effective implementation of Mitigation Measures VR-3 (Project Design to Reduce Visual Contrast) and VR-4 (Surface Treatment).

Decommissioning

Decommissioning effects for this alternative would be the same as described for Alternative B. The reader is referred to Section 4.19.11 for a discussion of decommissioning.

Mitigation Measures

Mitigation Measures VR-1 through VR-6 would also apply to Alternative D. The reader is referred to Section 4.19.6 for a complete description of these measures.

Residual Impacts and Unavoidable Adverse Effects

The residual impacts and unavoidable adverse effects of Alternative D would be the same as for Alternative B. The reader is referred to Section 4.19.11 for a complete discussion of these effects.

4.19.14 Alternative E – New Cross-Valley Alignment

From the area of the solar facility, Alternative E would cross Chuckwalla Valley in a southeasterly direction north of the Alternative D alignment before converging on and then spanning I-10 to connect to the proposed Red Bluff Substation (see Figure 3.19-3).

Construction

Construction effects for this alternative would be the same as described for Alternative B. The reader is referred to Section 4.19.11 for a discussion of construction effects.

Operation and Maintenance

An analysis of operation and maintenance effects for this alternative was conducted for the view areas represented by KOP 7 and KOP 8 (Figure 3.19-3), which were selected for in-depth visual analysis because these are the only representative KOPs (of the eight total KOPs) that provide views of Alternative E from the two most highly traveled road corridors (SR-177 and I-10 respectively) in the project study area. The results of the effects analysis are discussed below and presented in the Visual Analysis Summary table included as Appendix G-2. Contrast rating analyses were conducted at KOP 7 and KOP 8 to determine the level of change that would be caused by implementation of this alternative and the alternative's consistency with the applicable Interim VRM class management objectives. The Contrast Rating Data Sheets are provided in Appendix G-4.

KOP 7 – Northbound SR-177

Figure 4.19-7A presents the existing view to the northeast from KOP 7 on northbound SR-177, approximately 0.3 mile southwest of the Alternative E span of SR-177. The view captures a central portion of the northern Chuckwalla Valley where it is bisected by Kaiser Road. The view is backdropped by the southeastern extent of the Coxcomb Mountains and the more distant Palen Mountains. Figure 4.19-7B presents a visual simulation that depicts the Alternative E gen-tie line as it converges on, and then spans, SR-177 passing into the immediate foreground of views and within the primary cone of vision of both northbound and southbound travelers on SR-177. Given the openness of the terrain and the unobstructed sightlines, travelers would be afforded extended viewing durations as the transmission line converges on and spans the road. Given the close proximity and relatively large scale of the proposed facility, atmospheric conditions would have minimal to no effect on the viewing experience in the vicinity of the span, though roadside vegetation would partially screen the more distant structures on either side of the span.

As shown in the simulation, this alternative would result in the introduction of visually prominent built structures into a landscape generally lacking structures of similar scale and industrial or technological character. The form of the tubular steel poles and curvilinear conductors within the foreground exhibits moderate-to-strong contrast arising from the horizontal nature of the foreground/middleground road corridor and valley floor. The prominent vertical lines of the poles also cause a moderate degree of contrast with the general horizontal, diagonal, and irregular lines in the landscape associated with the valley floor, SR-177, and background ridgelines. These form and line contrasts are somewhat moderated by the linear forms and vertical lines of an existing wood-pole utility line adjacent to SR-177. The colors of the existing landscape are a blend of muted greens and tans for vegetation, tans for desert soils that transition to lavender and bluish hues at distance, and light to medium gray for the pavement of SR-177. The light gray of the transmission structures creates a weak-to-moderate contrast against the light blue sky, bluish hues of the background mountains, and green vegetation. The poles present a weak degree of contrast compared to the foreground gray color of the road pavement. The overall color contrast would be weak to moderate. The smooth texture of the structures and industrial surfaces would appear out of place in this rugged desert landscape characterized by the matte to granular

textures of rock, soil, and vegetation. The resulting texture contrast would also be weak-to-moderate. Also, the structures and conductors would cause partial view blockage of the Coxcomb and Palen mountains and sky. These contrasts would substantially degrade the existing visual character or quality of the surrounding landscape.

Alternative E with its prominent linear, vertical, structural forms and lines, and smooth industrial surfaces would not repeat the basic elements of the existing natural features in the landscape (horizontal, rugged and coarse valley floor supporting irregular distributions of vegetation clumps and individuals, backdropped by the somewhat horizontal, yet, jagged and angular to rolling Coxcomb and Palen mountains). Also, the gen-tie line would constitute a foreground co-dominant to dominant feature in the landscape (depending on proximity to the line), thus attracting the attention of the casual observer. The prominence of the transmission structures would be accentuated by the skylining that would occur where structures visibly protrude above the horizon. Further, given the openness of the terrain and lack of substantial vegetation, the convergence on, and span of, SR-177 would be visible from considerable distance along SR-177 in both directions of travel. Thus, numerous transmission structures would be collectively visible within the primary cone of vision of travelers on SR-177 for an extended duration, which would contribute to the overall apparent prominence of this alternative as it passes through the viewshed visible from SR-177. However, the moderate-to-high level of change that would result would be allowed under the Interim VRM Class IV management objective (see the VRM Contrast Rating form for KOP 7 in Appendix G-4).

Although the resulting visual effect would be adverse and unmitigable when viewed from KOP 7 and other foreground locations along SR-177 (see discussion below under Section 4.19.16 CEQA Considerations), it is anticipated that the adverse visual effect could be somewhat reduced with the effective implementation of Mitigation Measures VR-3 (Project Design to Reduce Visual Contrast) and VR-4 (Surface Treatment).

This viewpoint analysis is also applicable to the southern-most portion of the Desert Lily Sanctuary ACEC, which is located in close proximity to, and north of, the Alternative E alignment east of SR-177 (see Figure 3.19-1).

KOP 8 – Westbound I-10 East of Desert Center

Figure 4.19-8A presents the existing view to the north from KOP 8 on westbound I-10 north of the proposed Red Bluff Substation site, approximately 5.75 miles east of Desert Center and approximately 0.2 mile east of the Alternative E span of I-10. The view captures a central portion of the generally natural appearing northern Chuckwalla Valley north of I-10 and backdropped by the Coxcomb Mountains. Figure 4.19-8B presents a visual simulation that depicts the Alternative E gen-tie line as it crosses Chuckwalla Valley in a circuitous path before converging on, and then spanning, I-10. As the transmission line converges on I-10, it passes into the immediate foreground of views and within the primary cone of vision of both eastbound and westbound travelers on I-10. However, due to the west-northwest orientation of the direction of travel on westbound I-10, a majority of the transmission line route would be located within the primary cone of vision of westbound travelers. Given the openness of the terrain and the unobstructed sightlines, travelers would be afforded extended viewing durations (particularly westbound travelers) as the transmission line traverses a central portion of Chuckwalla Valley in a circuitous path and then converges on and spans the highway. Given the close proximity and

relatively large scale of the proposed facility, the impairment of structure visibility due to adverse atmospheric conditions (e.g., haze) would be limited to only the most distant structures.

As shown in the simulation, this alternative would result in the introduction of numerous visually noticeable, prominent built structures into a landscape generally lacking similar built features of industrial or technological character. The forms of the tubular steel poles and curvilinear conductors within the foreground exhibits moderate-to-strong contrast arising from the horizontal nature of the foreground/middleground valley floor. The prominent vertical lines of the poles also contrast with the general horizontal and irregular lines in the landscape associated with the valley floor and background ridgelines. The resulting structural form and line contrasts would be moderate-to-strong, which would increase with closer proximity to the viewer and diminish with increasing distance from the viewer. The colors of the existing landscape are a blend of greens and tans for vegetation and tans for desert soils, that transition to lavender and bluish hues at distance. The light gray of the transmission structures creates a weak-to-moderate contrast against the light blue sky, bluish hues of the background mountains, and green vegetation. The smooth texture of the structures and industrial surfaces would appear out of place in this rugged desert landscape characterized by the matte to granular textures of rock, soil, and vegetation. However, with the greater viewing distances presented in the simulation, the resulting texture contrast would be weak. Also, the structures and conductors would cause partial view blockage of the background Chuckwalla Valley floor, Coxcomb Mountains, and sky. These contrasts would substantially degrade the existing visual character or quality of the surrounding landscape.

The transmission line with its prominent linear-vertical and curvilinear structural forms and lines would not repeat the basic elements of the existing natural features in the landscape (horizontal, rugged, and coarse valley floor supporting irregular distributions of vegetation clumps and individuals, and backdropped by the jagged and angular Coxcomb Mountains). Also, the gen-tie line would constitute a foreground co-dominant to dominant feature in the landscape (depending on proximity to the line — the closer the viewer to the span of I-10, the more prominent the line becomes), thus attracting the attention of the casual observer. The prominence of the transmission structures would be accentuated by the skylining that would occur where structures visibly protrude above the horizon, which would be particularly noticeable on closer approach to the I-10 span. However, the moderate-to-high level of change that would result would be allowed under the applicable Interim VRM Class IV management objective (see the VRM Contrast Rating form for KOP 8 in Appendix G-4).

Although the resulting visual effect would be adverse and unmitigable when viewed from KOP 8 and other foreground locations along I-10 (see discussion below under Section 4.19.16 CEQA Considerations), it is anticipated that the adverse visual effect could be somewhat reduced with the effective implementation of Mitigation Measures VR-3 (Project Design to Reduce Visual Contrast) and VR-4 (Surface Treatment).

Decommissioning

Decommissioning effects for this alternative would be the same as described for Alternative B. The reader is referred to Section 4.19.11 for a discussion of decommissioning.

Mitigation Measures

Mitigation Measures VR-1 through VR-6 would also apply to Alternative E. The reader is referred to Section 4.19.6 for a complete description of these measures.

Residual Impacts and Unavoidable Adverse Effects

The residual impacts and unavoidable adverse effects of Alternative E would be the same as for Alternative B. The reader is referred to Section 4.19-11 for a complete discussion of these effects.

4.19.15 Cumulative Effects

Cumulative effects to visual resources would occur where DHSP facilities or activities would occupy the same field of view as other built facilities or impacted landscapes, and an adverse change in the visible landscape character is perceived. These are often categorized as local viewshed effects. A cumulative effect could also occur if a viewer perceives that the general visual quality or landscape character of a localized or regional area (I-10 corridor) is diminished by the proliferation of visible similar structures or construction effects, even if the changes are not within the same field of view as existing (or future) structures or facilities. The result is a perceived "industrialization" or "urbanization" of the existing rural or undeveloped landscape character. These are often categorized as regional viewshed effects.

There is the potential for substantial future development along the I-10 corridor between the Coachella Valley and Blythe. A list of the existing and reasonably foreseeable cumulative projects is provided in Tables 4.1-1 and 4.1-2 and shown on Figures 4.1-1. A subset consisting of 26 of those projects would combine with DHSP to cause both local and regional viewshed cumulative effects. Those cumulative projects are identified in Table 4.19-1.

Geographic Scope

Cumulative effects to visual resources could occur if implementation of the DHSP would combine with those of other local or regional projects. DHSP is potentially associated with two types of cumulative effects:

- **Local cumulative effects** within the immediate project viewshed (local projects typically within 15 miles of DHSP) including existing and reasonably foreseeable future projects in the northern Chuckwalla Valley; and
- **Regional cumulative effects** beyond the immediate project viewshed, which would include the existing and reasonably foreseeable future solar and other energy and development projects along the I-10 corridor between the Coachella Valley and Blythe. These projects, while not located within the same field of view as DHSP would, in combination with DHSP, contribute to a sense of industrialization or urbanization of the existing landscape character as viewed by travelers along I-10.

Table 4.19-1 Visual Resources Cumulative Projects

Existing Projects			
Local Viewshed Cumulative Projects		Regional Viewshed Cumulative Projects	
#	Name	#	Name
1	Interstate 10	5	Blythe Energy Project
4	Devers-Palo Verde No. 1 500 kV T-Line	11	Blythe PV Project
7	Eagle Mountain Pumping Plant		
9	Kaiser Mine		
10	Blythe Energy Project T-Line		
12	Chuckwalla Valley Raceway		
Reasonably Foreseeable Projects			
Local Viewshed Cumulative Projects		Regional Viewshed Cumulative Projects	
#	Name	#	Name
D	Devers-Palo Verde No. 2 500 kV T-Line	G	Blythe Energy Project II
F	Desert Southwest T-Line	J	Blythe Solar Power Project
H	Eagle Mountain Pumped Storage Project	K	NextEra (FPL) McCoy Solar Project
I	Palen Solar Energy Project	M	Genesis Solar Energy Project
R	Desert Sunlight Solar Project	P	Blythe Airport Solar I Project
S	SCE Red Bluff Substation	Y	Wiley's Well Telecom Tower
T	Desert Center 50 Solar Project	HH	BLM Solar Energy Zones
U	Sol Orchard Solar Project		
X	Eagle Mountain Landfill Project		
Z	Eagle Mountain Wind Project Met Towers		
CC	Silverado Power I, II, III		

Cumulative Effects Analysis

There would be no cumulative visual resources effects under the No Action or No Project Alternatives (Alternatives 1, 3, or A) because there would be no ROW grant for development of the solar facility and gen-tie line. Alternative 2: No Project Alternative (with Plan Amendment to Find the Site Suitable for Solar Energy Development) could contribute to cumulative visual resources effects because the CDCA Plan could be amended to allow another solar development of the site. However, any future proposals for use of the DHSP site would be subject to separate environmental analysis, and the potential contribution of such a future project is speculative at this juncture. The remainder of this section addresses the Action Alternatives: Alternatives 4, 5, 6, and 7 and gen-tie alignment Alternatives B through E.

Existing Cumulative Projects

This section identifies the existing projects and actions that have affected and will continue to affect landscape character in the local and regional cumulative study areas described above. There has been relatively limited development and/or industrialization of the landscape within the DHSP's viewshed (extending out approximately 15 miles to the limit of the background distance zone). Table 4.19-1 above identifies six existing cumulative projects within a reasonable

viewing distance of DHSP (locally cumulative projects) including project numbers 1, 4, 7, 9, 10, and 12 (map identification numbers on Figure 4.1-1).

All of the projects share at least one visual characteristic with DHSP. I-10 appears as a long, linear, horizontal feature covering the valley floor. The solar facility action alternatives would also appear as a low, horizontal, linear feature covering the valley floor when viewed at distance. The Devers-Palo Verde No. 1 and Blythe Energy Project transmission lines would share similar industrial character and vertical linear forms with the DHSP gen-tie line. The Eagle Mountain Pumping Plant will share some of the complex industrial characteristics as would be apparent with the solar facility and substation. The Kaiser Mine and Chuckwalla Valley Raceway both exhibit ground disturbance and scarring that would result in visual contrast similar to what would be apparent with implementation of DHSP. All of these projects would be visible within the same field of view as DHSP when viewed from a variety of viewpoints. All of these projects, in conjunction with DHSP, contribute to the conversion of natural desert landscapes to landscapes that substantially contrast with the natural character of the desert landscape (complex industrial and/or geometric forms and lines, and surface textures and colors that are not apparent in natural, undisturbed desert landscapes). Therefore, there would be combined effects on visual resources from the combination of DHSP and the six locally cumulative projects, both individually (each project plus DHSP) and collectively (all six projects).

Additionally, the two existing regionally cumulative energy generation projects (#5 – Blythe Energy Project and #11 – Blythe PV Project) near the City of Blythe also contribute to a cumulative sense of urbanization and industrialization along the I-10 corridor. Therefore, DHSP in conjunction with these two existing projects, individually and collectively, would contribute to cumulative effects on the visual resources and landscapes along the I-10 corridor.

The exception would be Alternative B, which would not contribute to cumulative visual effects as the cumulative scenario assumes concurrent construction of the Desert Sunlight approved gen-tie and Alternative B conductor stringing using the same crew at the same time, with no additional work required for Alternative B beyond what is required for the Desert Sunlight gen-tie.

Finally, Alternative C would have a slightly larger adverse cumulative effect in the vicinity of Desert Center, Kaiser Road, and Lake Tamarisk compared to Alternatives D and E. This is because Alternative C would site a gen-tie line directly adjacent to the Desert Sunlight approved gen-tie, and both projects would be present in the same ROW in the cumulative scenario. Multiple gen-tie lines in a single ROW would contribute to a slightly larger sense of industrialization in the immediate viewshed of Alternative C.

Reasonably Foreseeable Cumulative Projects

This section identifies the reasonably foreseeable projects and actions that would affect landscape character in the local and regional cumulative study areas described above.

Local Foreseeable Cumulative Projects

Operation and Maintenance Impacts. Table 4.19-1 above identifies 11 foreseeable local cumulative projects within a reasonable viewing distance of DHSP including project letters: D, F, H, I, R, S, T, U, X, Z, and CC (map identification letters on Figure 4.1-1). Of the 11 local projects, 10 are energy projects and one is a landfill project. Most of these projects have either undergone independent environmental review pursuant to NEPA and/or CEQA or will do so prior to

approval. Even if environmental review has not been completed for the cumulative projects described in Table 4.19-1, their effects were considered in the cumulative effects analyses in this EIS.

The 10 local foreseeable cumulative energy projects would all exhibit similar complex industrial characteristics, structural visual contrast (form, line, color, and texture), structural prominence, night lighting, and view blockage of existing landscape features comparable to DHSP (though there would be some differences depending on the type of project and viewing location). Figures 4.19-2A, 4.19-2B, and 4.19-2C are examples to show the cumulative effect of the DHSP and the Desert Sunlight Solar Farm project, which is the closest cumulative project and is located immediately adjacent and to the north of DHSP. Figure 4.19-2A presents the existing view of the northern Chuckwalla Valley from KOP 2 on the western flank of the Coxcomb Mountains. This elevated viewpoint provides an elevated perspective of the valley north of I-10. Figure 4.19-2B presents a simulation of Alternative 4, which is located approximately 3.5 miles to the southwest. The solar panel arrays are shown facing (tilted) to the south, away from the viewer at KOP 2, and would appear as a spatially prominent and central series of geometric patterns on the basin floor, which would contrast with the predominantly natural appearance of the northern Chuckwalla Valley landscape. Figure 4.19-2C presents a cumulative simulation of Alternative 4 with the Desert Sunlight solar project, at a viewing distance of 2.5 to 3.5 miles to the southwest. Again, the view is toward the back of the solar fields with the solar panels facing toward the south, away from the KOP 2 viewing location. As shown in the simulation, from the viewing angle and higher elevation of KOP 2, DHSP would noticeably expand the solar development area begun by the Desert Sunlight solar project and the cumulative visual effect of the two projects would be substantially greater with a larger portion of the valley being converted from a natural desert valley landscape to that of an industrial energy complex. At this viewing distance, the two projects would appear as a spatially prominent series of geometric patterns that do not replicate the form, line, color, or texture of the existing desert landscape.

Appendix G5 also presents a time-lapse visual simulation of both DHSP and the Desert Sunlight solar project (to the left in the simulation) as viewed from KOP 9 in Joshua Tree Wilderness, approximately five miles to the west of the project site. Again, as shown in the simulation from KOP 9, while the two projects in combination would noticeably expand the solar development area begun by the Desert Sunlight solar project, resulting in a substantial cumulative visual effect, there are essentially no visual effects (glare or glint) off the tracking panels that either increase the prominence of DHSP or distinguish it from the immediately adjacent Desert Sunlight solar project, and most observers from this viewing location would perceive the two projects as a single development.

The cumulative visual impact of DHSP and all 10 of the energy projects would be considerably greater (in terms of visual contrast, industrial character, structural prominence, and view blockage) than the cumulative visual impact of just DHSP and Desert Sunlight as described earlier in this paragraph.

The landfill project would exhibit substantial visual contrast associated with land modification and scarring and the associated color contrast of disturbed soils relative to the surrounding terrain characteristics. The landfill project would also exhibit some similar industrial characteristics compared to DHSP and the 10 cumulative energy projects.

These 11 projects and DHSP, individually and collectively, would visually transform a substantial portion of the greater Chuckwalla Valley (see Figure 4.1-1) by contributing to the conversion of natural desert landscapes to landscapes with substantial industrial, technological, and modified land characteristics. The resulting visual effects would be cumulatively adverse.

The exception would be Alternative B, which would not contribute to cumulative visual effects as the cumulative scenario assumes concurrent construction of the Desert Sunlight approved gen-tie and Alternative B conductor stringing using the same crew at the same time, with no additional work required for Alternative B beyond what is required for the Desert Sunlight gen-tie.

Finally, Alternative C would have a slightly larger adverse cumulative effect in the vicinity of Desert Center, Kaiser Road, and Lake Tamarisk compared to Alternatives D and E. This is because Alternative C would site a gen-tie line directly adjacent to the Desert Sunlight approved gen-tie, and both projects would be present in the same ROW in the cumulative scenario. Multiple gen-tie lines in a single ROW would contribute to a slightly larger sense of industrialization in the immediate viewshed of Alternative C. Figure 4.19-5C shows a cumulative effects simulation of Alternative C and the Desert Sunlight Solar Farm approved gen-tie in the same ROW along Kaiser Road.

Construction Impacts. If construction at any or all of the 11 local foreseeable cumulative project locations were to occur at the same time as, or consecutively before or after, construction of DHSP, construction activities, equipment and night lighting from these sites would combine with similar activities and equipment from the DHSP site. Construction of DHSP and the other cumulative projects in the vicinity would lead to the continued presence of construction equipment on roads and in the landscape in the local project region for several years and cause a cumulatively adverse. The exception would be Alternative B, which would not contribute to cumulative visual effects as the cumulative scenario assumes concurrent construction of the Desert Sunlight approved gen-tie and Alternative B conductor stringing using the same crew at the same time, with no additional work required for Alternative B beyond what is required for the Desert Sunlight gen-tie.

Regional Foreseeable Cumulative Projects

Operation and Maintenance Impacts. Table 4.19-1 above identifies seven foreseeable regional cumulative projects including six energy projects (G, J, K, M, P, and HH – map identification letters on Figure 4.1-1) and one telecommunications tower project (Y) located beyond the immediate viewshed of DHSP. These projects would all exhibit similar complex industrial characteristics, structural visual contrast (form, line, color, and texture), structural prominence, and view blockage of existing landscape features comparable to components of DHSP (though there would be some differences depending on the type of project and viewing location). These seven foreseeable regional cumulative projects and DHSP, individually and collectively, would visually transform a substantial portion of the I-10 corridor landscape by contributing to the conversion of natural desert landscapes to landscapes with prominent industrial character, prominent complex and geometric forms and lines, and surface colors and textures not typically found in a natural desert landscape. All of these projects would also typically cause land scarring and soil disturbance that result in long-term soil color contrasts and unnatural vegetative lines. New structures would cause view blockage or impairment of higher quality background features (valley floor, mountain ridges, and sky). As a result, DHSP and the regional cumulative projects

combined would result in a **perceived** increase in industrialization of the landscape, diminution of visual quality, and increase in visual contrast visible in the I-10 corridor between the Coachella Valley and Blythe even though the regional cumulative projects would not be visible in the same field of view as DHSP. The resulting visual impact would be cumulatively adverse.

The exception would be Alternative B, which would not contribute to cumulative visual effects as the cumulative scenario assumes concurrent construction of the Desert Sunlight approved gen-tie and Alternative B conductor stringing using the same crew at the same time, with no additional work required for Alternative B beyond what is required for the Desert Sunlight gen-tie.

Finally, Alternative C would have a slightly larger adverse cumulative effect in the vicinity of Desert Center, Kaiser Road, and Lake Tamarisk compared to Alternatives D and E. This is because Alternative C would site a gen-tie line directly adjacent to the Desert Sunlight approved gen-tie, and both projects would be present in the same ROW in the cumulative scenario. Multiple gen-tie lines in a single ROW would contribute to a slightly larger sense of industrialization in the immediate viewshed of Alternative C. Figure 4.19-5C shows a cumulative effects simulation of Alternative C and the Desert Sunlight Solar Farm approved gen-tie in the same ROW along Kaiser Road.

Construction Impacts. If construction at any or all of the seven foreseeable regional cumulative project locations were to occur at the same time as, or consecutively before or after, construction of DHSP, construction activities, equipment and night lighting from these sites would combine with similar activities and equipment from the DHSP site. Construction of DHSP and the other regional cumulative projects would lead to the continued presence of construction equipment on roads and in the landscape in the I-10 corridor for several years and cause a cumulatively adverse visual effect.

The exception would be Alternative B, which would not contribute to cumulative visual effects as the cumulative scenario assumes concurrent construction of the Desert Sunlight approved gen-tie and Alternative B conductor stringing using the same crew at the same time, with no additional work required for Alternative B beyond what is required for the Desert Sunlight gen-tie.

Decommissioning

Cumulative effects associated with decommissioning of DHSP would include the removal and disposal of solar arrays, transmission structures, other electrical components, and ancillary facilities, as well as the removal of all underground infrastructure to three feet below the ground surface. Short-term, deconstruction activities would result in visual impacts similar to project construction. Restoration of the DHSP site would include returning the area as close as reasonably possible to pre-construction conditions suitable for current adjacent land. However, following removal of the facilities, strong color contrasts associated with vegetation removal and disturbed soils would remain. In addition, revegetation in a desert region is difficult and generally is of limited success. Therefore, visual recovery from land disturbance associated with closure and decommissioning activities would likely occur only over a very long period of time. Mitigation Measure VR-2 requires the project owner to achieve site restoration to the extent feasible for the DHSP, pursuant to a Decommissioning Plan approved by the BLM. It is anticipated that other reasonably foreseeable future projects would be subject to such requirements.

4.19.16 CEQA Considerations

This section is included in this EIS and Draft Plan Amendment for future use by CEQA Lead and Responsible agencies and is not required under NEPA.

CEQA Significance Criteria

The criteria used to assess the significance of visual impacts resulting from a project take into consideration the factors described in the previous section, as well as federal, state, and local policies and guidelines pertaining to visual resources. Appendix G of the CEQA Guidelines identifies four circumstances that can lead to a determination of significant visual impact. These have been adapted as set forth below for the analysis that follows.

V-1 Project construction or the long-term presence of Project components would cause a substantial effect on a scenic vista.

V-2 Project construction or the long-term presence of Project components would substantially damage scenic resources including, but not limited to, trees, rock outcroppings, and historic buildings within view of a State Scenic Highway.

V-3 Project construction or the long-term presence of Project components would substantially degrade the existing visual character or quality of the site and its surrounding landscape. [Note: Substantial degradation results from higher levels of visual contrast, project dominance, and view blockage. Visual contrast relates to spatial characteristics, visual scale, texture, form, line, and color.]

V-4 Project construction or the long-term presence of a project would create a new source of substantial light or glare that would adversely affect day or nighttime views in the area or be hazardous to motorists or pedestrians.

Three additional criteria that can lead to a determination of significant visual impact include the following.

V-5 The presence of DHSP would result in a long-term (greater than five years) inconsistency with established (or interim) BLM VRM class objectives (applies only to public lands administered by the BLM). This would typically occur where a landscape with a relatively high visual quality and viewer concern is noticeably altered.

V-6 Construction of DHSP or the presence of Project components would result in an inconsistency with local regulations, plans, and standards applicable to the protection of visual resources.

V-7 The presence of DHSP would add to a cumulative visual alteration.

CEQA Significance Determination

This analysis considered the potential impacts of the proposed project and alternatives in relation to the four significance criteria for visual resource impacts listed in Appendix G of the CEQA guidelines (Impact Criteria V-1 through V-4), under Aesthetics, and the three additional criteria (Impact Criteria V-5 through V-7) presented in the previous subsection.

Alternative 1

Under Alternative 1, the proposed DHSP would not be approved by the BLM, and the BLM would not amend the CDCA Plan. As a result, no solar energy project would be constructed on the project site, and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended. Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition with no new structures or facilities constructed or operated on the site and no ground disturbance. As a result, impacts to visual resources would not occur. Since no visual impacts would result from this alternative, there would be no contribution to cumulative impacts.

Alternative 2

Under Alternative 2, the proposed DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site available for future solar energy development. With such an amendment, a similar solar project could be proposed on the project site. Project impacts associated with such a future project would be analyzed at the time a project is proposed through submission of a ROW application and are not considered to result from approval of the No Project Alternative (with Plan Amendment to Find the Site Suitable for Solar Energy Development). As a result, the DHSP would not be constructed on the project site, and no visual impacts from the DHSP would occur. Since no visual impacts would result from this alternative, there would be no contribution to cumulative impacts.

Alternative 3

Under Alternative 3, the proposed DHSP would not be approved (all components of the project denied), no ROW grant would be issued to the Applicant, and the BLM would amend the CDCA Plan to find the site unsuitable and unavailable for large-scale solar development. This alternative would not place a special designation or level of protection on the project site. If the project study area were not available for large-scale solar development, it would remain available for other types of uses allowable on BLM land. This may include mining, recreation, utilities, and other energy development allowed on lands classified as Multiple Use Class M (Moderate Use), which constitutes most of the project locations, and lower-intensity uses in the areas designated as Multiple Use Class L (Limited Use). As a result, the DHSP would not be constructed on the project site, and no visual impacts from the DHSP would occur. Since no visual impacts would result from this alternative, there would be no contribution to cumulative impacts.

Alternative 4

Impact Criterion V-1. Although no designated scenic vistas were identified in the study area, panoramic and highly scenic vistas are available to backcountry recreationists that access the Joshua Tree Wilderness and Chuckwalla Mountains Wilderness. As shown in Figure 4.19-2A and 2B for the representative KOP 2, the solar facility would be prominently visible from elevated vantagepoints in the area, and the introduction of industrial character and structural visual contrast would result in substantial adverse effects on these views. The resulting visual impact would be significant and unavoidable. However, Mitigation Measures VR-1 through VR-4 are still required to reduce the visual impact to the extent feasible.

Impact Criterion V-2. There are no State Scenic Highways in the immediate project vicinity, so significant visual impacts would not occur under this criterion.

Impact Criterion V-3. As discussed in Section 4.19.6 of this analysis, Alternative 4 would introduce a prominent built facility with considerable industrial character into an existing landscape presently absent such features, causing a substantial degradation of the existing visual character or quality of the site and its surrounding landscape when viewed from the elevated viewpoints in the wilderness areas as demonstrated for KOP 2 and from I-10. The resulting visual impacts would be significant and unavoidable. However, close-proximity, at-grade views of the solar farm (from Kaiser Road, the Lake Tamarisk Community, and SR-177) would be significant but could be mitigated to levels that would be less than significant if a vegetative screening buffer of sufficient width (a minimum of 200 feet) is maintained between the viewing locations and the proposed project facilities (MM VR-5). More distant at-grade views, such as those at KOP 1 and KOP 4 would not experience substantial degradation of the existing visual character or quality of the landscape because of the apparent small scale of the proposed project elements at those considerable viewing distances (KOP 1) and/or the presence of intervening screening vegetation (KOP 4). The resulting visual impact in those circumstances would be adverse but less than significant. Views of the project from linear viewpoints including Kaiser Road, SR-177, and I-10 would experience a range of visual impact. Road segments and travel directions labeled in red or orange in Figure 3.19-2 would typically experience significant visual impacts. In some cases, the impact might be mitigable if the strategic planting of sufficient intervening vegetation to intersect sightlines to the project were feasible. Road segments and travel directions labeled in yellow and green in Figure 3.19-2 would experience less than significant or no visual impacts, depending on the presence of intervening screening, typically by vegetation or structures. Mitigation Measures VR-1 through VR-5 are required to reduce visual impacts to the extent feasible.

Impact Criterion V-4. Joshua Tree National Park is known throughout the National Park System for its significant Dark Sky resource. To serve a substantial public interest in Dark Sky observation, Joshua Tree National Park offers a variety of Night Sky Programs. In the immediate Project region, Dark Sky visitors access the east end of the Pinto Basin at the access gate adjacent to KOP 1. Because any light source in the desert contributes to ambient light pollution and all light sources are adversely cumulative in terms of the impact on human dark adaptation and the dwindling availability of Dark Sky observation areas, it is essential that substantial steps be taken to ensure that additional night sky light pollution does not occur from implementation of DHSP. Alternative 4 has the potential to introduce a new source of substantial light that would adversely affect nighttime views in the area. The resulting visual impact would be significant, but it is mitigable to a less than significant level with strict and effective implementation of Mitigation Measure VR-6 (Night Lighting Control).

Impact Criterion V-5. The low-to-high degrees of visual change that would be caused by Alternative 4 would be allowed under the applicable Interim VRM Class IV management objective. The Class IV management objective provides for:

> *"….management activities that require major modification of the landscape character. The level of change to the characteristic landscape can be high. Management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities*

> *through careful location, minimal disturbance, and repetition of the basic landscape elements."*

Therefore, the resulting visual impact would be less than significant under this criterion. However, Mitigation Measures VR-1 through VR-6 are required to reduce visual impacts to the extent feasible.

Impact Criterion V-6. The moderate-to-high degree of visual change that would be caused by the proposed solar facility would not be consistent with the following Riverside County General Plan policies: LU 4.1, LU 13.1, LU 13.3, LU 13.5, LU 13.8, LU 20.1, LU 20.2, LU 20.4, DCAP 2.3, DCAP 9.1, and DCAP 10.1. These policy inconsistencies would result in a significant and unavoidable, long-term adverse impact to visual resources. However, Mitigation Measures VR-1 through VR-6 are required to reduce visual impacts to the extent feasible.

Impact Criterion V-7. As discussed in Section 4.19.15 the presence of Alternative 4 would substantially add to a cumulative visual alteration. The resulting cumulative visual impact would be significant and unavoidable. However, Mitigation Measures VR-1 through VR-6 are required to reduce visual impacts to the extent feasible.

Cumulative impacts are described for Alternative 4 in Section 4.19.15. From a CEQA perspective, Alternative 4 would combine with other past, present, and reasonably foreseeable projects in the project study area to result in a cumulatively significant impact. Alternative 4's contribution to this cumulative impact would be considerable.

Alternative 5

The impact significance determinations for Alternative 5 would be the same as for Alternative 4.

Alternative 6

The impact significance determinations for Alternative 6 would be the same as for Alternative 4 but impacts to viewers on Kaiser Road would be reduced.

Alternative 7

Impact Criterion V-1. Although no designated scenic vistas were identified in the study area, panoramic and highly scenic vistas are available to backcountry recreationists that access the Joshua Tree Wilderness and Chuckwalla Mountains Wilderness. As shown in Figure 4.19-2A and 2B for the representative KOP 2, the Proposed project would be prominently visible from elevated vantagepoints in the area, and the introduction of industrial character and structural visual contrast would result in substantial adverse effects on these views. The resulting visual impact would be significant and unavoidable. This conclusion would also apply to Alternative 7 because Alternative 7 would appear very similar to the Proposed project at this viewing distance. However, Mitigation Measures VR-1 through VR-4 are still required to reduce the visual impact to the extent feasible.

Impact Criterion V-2. There are no State Scenic Highways in the immediate Project vicinity, so significant visual impacts would not occur under this criterion.

Impact Criterion V-3. As discussed in Section 4.19.9 of this analysis, Alternative 7, with its high-profile solar panels, would introduce a prominent built facility with considerable industrial

character into an existing landscape presently absent such features, causing a substantial degradation of the existing visual character or quality of the site and its surrounding landscape when viewed from the elevated viewpoints in the wilderness areas as demonstrated for KOP 2, from close-proximity, at-grade views along Kaiser Road as demonstrated by KOP 3A, and from I-10 as demonstrated by KOP 8A. The resulting visual impacts would be significant and unavoidable. Unlike the Proposed project with its low-profile solar panels, it is unlikely that the high-profile solar panels of Alternative 7 could be sufficiently screened by roadside and intervening vegetation to reduce the visual impact to a level that would be less than significant. However, it is still required that a vegetative screening buffer of sufficient width (a minimum of 200 feet) be maintained between the viewing locations and the proposed project facilities (MM VR-5). More distant at-grade views, such as those at KOP 1 and KOP 4 would not experience substantial degradation of the existing visual character or quality of the landscape because of the apparent small scale of the proposed project elements at those considerable viewing distances (KOP 1) and/or the presence of intervening screening vegetation (KOP 4). The resulting visual impact in those circumstances would be adverse but less than significant. Views of the proposed project from linear viewpoints including Kaiser Road, SR-177, and I-10 would experience a range of visual impact. Road segments and travel directions labeled in red or orange in Figure 3.19-2 would typically experience significant visual impacts. In some cases, the impact might be mitigable if the strategic planting of sufficient intervening vegetation to intersect sightlines to the proposed project were feasible. Road segments and travel directions labeled in yellow and green in Figure 3.19-2 would experience less than significant or no visual impacts, depending on the presence of intervening screening, typically by vegetation or structures. Mitigation Measures VR-1 through VR-5 are required to reduce visual impacts to the extent feasible.

Impact Criterion V-4. Joshua Tree National Park is known for throughout the National Park System for its significant Dark Sky resource. To serve a substantial public interest in Dark Sky observation, Joshua Tree National Park offers a variety of Night Sky Programs. In the immediate Project region, Dark Sky visitors access the east end of the Pinto Basin at the access gate adjacent to KOP 1. Because any light source in the desert contributes to ambient light pollution and all light sources are adversely cumulative in terms of the impact on human dark adaptation and the dwindling availability of Dark Sky observation areas, it is essential that substantial steps be taken to ensure that additional night sky light pollution does not occur from implementation of DHSP. Alternative 7 has the potential to introduce a new source of substantial light that would adversely affect nighttime views in the area. The resulting visual impact would be significant, but it is mitigable to a less than significant level with strict and effective implementation of Mitigation Measure VR-6 (Night Lighting Control).

Impact Criterion V-5. The low-to-high degrees of visual change that would be caused by Alternative 7 would be allowed under the applicable Interim VRM Class IV management objective. The Class IV management objective provides for:

> *"….management activities that require major modification of the landscape character. The level of change to the characteristic landscape can be high. Management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repetition of the basic landscape elements."*

Therefore, the resulting visual impact would be less than significant under this criterion. However, Mitigation Measures VR-1 through VR-6 are required to reduce visual impacts to the extent feasible.

Impact Criterion V-6. The moderate-to-high degree of visual change that would be caused by Alternative 7 would not be consistent with the following Riverside County General Plan policies: LU 4.1, LU 13.1, LU 13.3, LU 13.5, LU 13.8, LU 20.1, LU 20.2, LU 20.4, DCAP 2.3, DCAP 9.1, and DCAP 10.1. These policy inconsistencies would result in a significant and unavoidable, long-term adverse impact to visual resources. However, Mitigation Measures VR-1 through VR-6 are required to reduce visual impacts to the extent feasible.

Impact Criterion V-7. As discussed in Section 4.19.15 the presence of Alternative 7 (similar to the Proposed project) would substantially add to a cumulative visual alteration. The presence of DHSP would constitute a cumulatively considerable contribution to a significant cumulative visual impact.

Cumulative impacts would be the same for Alternative 7 as Alternative 4.

Alternative A

The impact significance determinations for Alternative A would be the same as for Alternative 1.

Alternative B

Impact Criterion V-1. The proposed transmission line is not anticipated to result in significant visual impacts under Impact Criterion V-1 given the extended viewing distances (more than miles) to potential scenic vista locations in the surrounding wilderness areas. Even though the resulting visual impact would be adverse but less than significant, Mitigation Measures VR-1 through VR-4 are still required to reduce likely visual impacts to the extent possible.

Impact Criterion V-2. There are no State Scenic Highways in the immediate Project vicinity, so significant visual impacts would not occur under this criterion.

Impact Criterion V-3. As discussed in Section 4.19.6 of this analysis, the proposed transmission line would introduce prominent built structures with considerable industrial character into an existing landscape generally absent such features causing a substantial degradation of the existing visual character or quality of the site and its surrounding landscape when viewed from foreground/middleground, at grade viewpoints including Kaiser Road and the Lake Tamarisk residential development (KOP 5), adjacent BLM lands, and I-10. The resulting visual impacts under this criterion would be significant and unavoidable. Views of the gen-tie transmission line from linear viewpoints including Kaiser Road, SR-177, and I-10 could experience a range of visual impact, though typically, given the large scale of the transmission structures and the open valley landscape, the close proximity view opportunities would experience significant and unavoidable visual impacts, and the more distant viewing opportunities would likely experience adverse but less than significant visual impacts. Mitigation Measures VR-1 through VR-4 are required to reduce visual impacts to the extent feasible.

Impact Criterion V-4. The proposed transmission line is not anticipated to result in significant visual impacts under Impact Criterion V-4 since the facility would not be a source of significant

light. The impact resulting from the FAA-required lighting on top of structures would be adverse but less than significant.

Impact Criterion V-5. The high degree of visual change that would be caused by the proposed transmission line (as viewed from Kaiser Road, the Lake Tamarisk residential community, adjacent BLM lands, and I-10) would be allowed under the applicable Interim VRM Class IV management objective. Therefore, the resulting visual impact would be less than significant under this criterion. However, Mitigation Measures VR-1 through VR-4 are required to reduce visual impacts to the extent feasible.

Impact Criterion V-6. The high degree of visual change that would be caused by the proposed transmission line would not be consistent with the following Riverside County General Plan policies: LU 4.1, LU 13.1, LU 13.3, LU 13.5, LU 13.8, LU 20.1, LU 20.2, LU 20.4, DCAP 2.3, DCAP 9.1, and DCAP 10.1. These policy inconsistencies would result in a significant and unavoidable, long-term adverse impact to visual resources. However, Mitigation Measures VR-1 through VR-4 are required to reduce visual impacts to the extent feasible.

Impact Criterion V-7. As discussed in Section 4.19.15, the presence of the proposed transmission line would substantially add to a cumulative visual alteration. The resulting cumulative visual impact would be significant and unavoidable. However, Mitigation Measures VR-1 through VR-4 are required to reduce visual impacts to the extent feasible.

Alternative B would not contribute to cumulative impacts as the cumulative scenario assumes concurrent construction of the Desert Sunlight approved gen-tie and Alternative B conductor stringing using the same crew at the same time, with no additional work required for Alternative B beyond what is required for the Desert Sunlight gen-tie.

Alternative C

The impact criteria conclusions for Alternative C would be the same as described for Alternative B, with the exception of cumulative impacts. Alternative C would have a slightly larger adverse cumulative impact in the vicinity of Desert Center, Kaiser Road, and Lake Tamarisk compared to Alternatives D and E. This is because Alternative C would site a gen-tie line directly adjacent to the Desert Sunlight approved gen-tie, and both projects would be present in the same ROW in the cumulative scenario. Multiple gen-tie lines in a single ROW would contribute to a slightly larger sense of industrialization in the immediate viewshed of Alternative C. The contribution of Alternative C to cumulative impacts would be considerable in combination with the Desert Sunlight gen-tie and other past, present, and reasonably foreseeable projects.

Alternative D

Impact Criterion V-1. The Alternative D transmission line is not anticipated to result in significant visual impacts under Impact Criterion V-1 given the extended viewing distances (over two miles) to potential scenic vista locations in the surrounding wilderness areas. Even though the resulting visual impact would be adverse but less than significant, Mitigation Measures VR-1 through VR-4 are still required to reduce likely visual impacts to the extent possible.

Impact Criterion V-2. There are no State Scenic Highways in the immediate Project vicinity, so significant visual impacts would not occur under this criterion.

Impact Criterion V-3. As discussed in Section 4.19.6 of this analysis, the Alternative D transmission line would introduce prominent built structures with considerable industrial character into an existing landscape generally absent such features causing a substantial degradation of the existing visual character or quality of the site and its surrounding landscape when viewed from foreground/middleground, at grade viewpoints including Kaiser Road (briefly), adjacent BLM lands, SR-177, and I-10 (KOP 6). The resulting visual impacts under this criterion would be significant and unavoidable. Views of the gen-tie transmission line from linear viewpoints including Kaiser Road, SR-177, and I-10 could experience a range of visual impact, though typically, given the large scale of the transmission structures and the open valley landscape, the close proximity view opportunities would experience significant and unavoidable visual impacts and the more distant viewing opportunities would likely experience adverse but less than significant visual impacts. Mitigation Measures VR-1 through VR-4 are required to reduce visual impacts to the extent feasible.

Impact Criterion V-4. The Alternative D transmission line is not anticipated to result in significant visual impacts under Impact Criterion V-4 since the facility would not be a source of significant light. The impact resulting from the FAA-required lighting on top of structures would be adverse but less than significant.

Impact Criterion V-5. The high degree of visual change that would be caused by the Alternative D transmission line (as viewed from Kaiser Road [briefly], adjacent BLM lands, SR-177, and I-10) would be allowed under the applicable Interim VRM Class IV management objective. Therefore, the resulting visual impact would be less than significant under this criterion. However, Mitigation Measures VR-1 through VR-4 are required to reduce visual impacts to the extent feasible.

Impact Criterion V-6. The high degree of visual change that would be caused by the Alternative D transmission line would not be consistent with the following Riverside County General Plan policies: LU 4.1, LU 13.1, LU 13.3, LU 13.5, LU 13.8, LU 20.1, LU 20.2, LU 20.4, DCAP 2.3, DCAP 9.1, and DCAP 10.1. These policy inconsistencies would result in an unavoidable, long-term adverse impact to visual resources. However, Mitigation Measures VR-1 through VR-4 are required to reduce visual impacts to the extent feasible.

Impact Criterion V-7. The presence of the Alternative D transmission line would substantially add to a cumulative visual alteration. The resulting cumulative visual impact would be significant and unavoidable. However, Mitigation Measures VR-1 through VR-4 are required to reduce visual impacts to the extent feasible.

Cumulative impacts would be slightly less than those described for Alternative C, but would nonetheless be cumulatively considerable.

Alternative E

Impact Criterion V-1. The Alternative E transmission line is not anticipated to result in significant visual impacts under Impact Criterion V-1 given the extended viewing distances (more than two miles) to potential scenic vista locations in the surrounding wilderness areas. Even though the resulting visual impact would be adverse but less than significant, Mitigation Measures VR-1 through VR-4 are still required to reduce likely visual impacts to the extent possible.

Impact Criterion V-2. There are no State Scenic Highways in the immediate Project vicinity, so significant visual impacts would not occur under this criterion.

Impact Criterion V-3. As discussed in Section 4.19.6 of this analysis, the Alternative E transmission line would introduce prominent built structures with considerable industrial character into an existing landscape generally absent such features causing a substantial degradation of the existing visual character or quality of the site and its surrounding landscape when viewed from foreground/middleground, at grade viewpoints including adjacent BLM lands, SR-177 (KOP 7), and I-10 (KOP 8). The resulting visual impacts under this criterion would be significant and unavoidable. Views of the gen-tie transmission line from linear viewpoints including Kaiser Road, SR-177, and I-10 could experience a range of visual impact, though typically, given the large scale of the transmission structures and the open valley landscape, the close proximity view opportunities would experience significant and unavoidable visual impacts, and the more distant viewing opportunities would likely experience adverse but less than significant visual impacts. Mitigation Measures VR-1 through VR-4 are required to reduce visual impacts to the extent feasible.

Impact Criterion V-4. The Alternative E transmission line is not anticipated to result in significant visual impacts under Impact Criterion V-4 since the facility would not be a source of significant light. The impact resulting from the FAA-required lighting on top of structures would be adverse but less than significant.

Impact Criterion V-5. The high degree of visual change that would be caused by the Alternative E transmission line (as viewed from adjacent BLM lands, SR-177, and I-10) would be allowed under the applicable Interim VRM Class IV management objective. Therefore, the resulting visual impact would be less than significant under this criterion. However, Mitigation Measures VR-1 through VR-4 are required to reduce visual impacts to the extent feasible.

Impact Criterion V-6. The high degree of visual change that would be caused by the Alternative E transmission line would not be consistent with the following Riverside County General Plan policies: LU 4.1, LU 13.1, LU 13.3, LU 13.5, LU 13.8, LU 20.1, LU 20.2, LU 20.4, DCAP 2.3, DCAP 9.1, and DCAP 10.1. These policy inconsistencies would result in an unavoidable, long-term adverse impact to visual resources. However, Mitigation Measures VR-1 through VR-4 are required to reduce visual impacts to the extent feasible.

Impact Criterion V-7. The presence of the Alternative E transmission line would substantially add to a cumulative visual alteration. The resulting cumulative visual impact would be significant and unavoidable. However, Mitigation Measures VR-1 through VR-4 are required to reduce visual impacts to the extent feasible.

Cumulative impacts would be the same as described for Alternative D.

4.20 WATER RESOURCES

4.20.1 Methodology for Analysis

This section describes effects on water resources that would be caused by implementation of the proposed Desert Harvest Solar Project (DHSP) or an alternative. A discussion of cumulative effects related to water resources is also included in Section 4.20-13. Effects to water resources were identified based on the predicted interaction between construction, operation, and decommissioning of the project or an alternative and the baseline environmental setting described in Section 3.20.

Water resources effects were considered for the project's potential to: violate water quality standards or waste discharge requirements; substantially deplete groundwater supplies or interfere with groundwater recharge; substantially alter existing drainage patterns such that erosion or flooding occur on- or off-site; place structures within Flood Hazard Areas such that flood flows would be impeded or redirected, or result in substantial risk associated with flooding; substantially degrade surface water or groundwater quality.

4.20.2 Applicant Measures

The following Applicant Measure (AM) have been incorporated as design features of the proposed project (and all action alternatives) and shall be implemented to reduce adverse impacts associated with the project. In some cases, mitigation measures further clarify or expand on AM reporting requirements, timing of implementation, or other details where appropriate. Where there is a conflict between provisions of the mitigation measures and the following AM, the mitigation measures take precedence.

AM WR-1 **Manage Hazardous Materials and Use SPCC Plan.** The Applicant or its agents will:

- Train construction staff in the management of hazardous materials and use of spill control and cleanup equipment;
- Have a clear chain of command within the organizational structure with responsibility for implementing, monitoring, and correcting BMPs;
- Cover and contain hazardous materials so that they are not in contact with precipitation or runoff;
- Store hazardous materials in one or more central areas, and institute rules requiring all hazardous materials to be secured at the end of the day;
- Maintain good inventory records; store hazardous liquids and dispensing equipment in secondary containment;
- Maintain adequate quantities of spill containment and response equipment at readily accessible points throughout the site;
- Identify the worst case and most likely spill scenarios, and provide spill response equipment adequate to respond to these scenarios;
- Use chemicals presenting the least environmental hazard wherever possible;

- Store the smallest quantities of hazardous materials possible on the site;
- Maintain site security to reduce vandalism;
- Require all contractors to abide by the program BMPs and to identify any hazardous materials and specific BMPs pertaining to their trade or activity.
- The SPCC Plan for the site would address storage of mineral oil contained in transformers. A SPCC Plan is required when 10,000 gallons or more of mineral oil in electrical equipment is contained on site, or when 1,320 gallons of petroleum is stored on the site, although an SPCC Plan can be voluntarily implemented for lesser quantities. The SPCC Plan would address methods and procedures for managing these products, lighting, security, containment requirements, training requirements, staff responsibilities for inspecting storage and dispensing equipment; and equipment and procedures for responding to a spill or release of stored petroleum products.
- Riprap increases surface roughness and slows runoff velocities, decreasing sediment transport, and increasing flow depth. Riprap would be used in conjunction with decompaction of soil, as riprap would not mitigate flow or volume.
- Check whether dams can be constructed to address specific post-development hydraulic characteristics, if needed.

4.20.3 Alternative 1 – No Action (No Plan Amendment)

Under Alternative 1, the proposed DHSP would not be approved by the BLM, and BLM would not amend the CDCA Plan. As a result, no solar energy project would be constructed on the project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan.

4.20.4 Alternative 2 – No Project Alternative (with Plan Amendment to Find the Site Suitable for Solar Energy Development)

Under Alternative 2, the proposed DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site available for future solar energy development. As a result, the DHSP would not be constructed on the project site and BLM would manage the site consistent with the amended land use designation in the CDCA Plan. It is possible that, as a result of the CDCA Plan amendment, that in the future another solar energy generation project could be proposed with impacts similar to the DHSP, however, such impacts are speculative at this time and no effects from the DHSP would occur.

4.20.5 Alternative 3 – No Project Alternative (with Plan Amendment to Find the Site Unsuitable for Solar Energy Development)

Under Alternative 3, the proposed DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site unavailable for future solar energy development. As a result, the DHSP would not be constructed on the project site and BLM would manage the site consistent with the amended land use designation in the CDCA Land Use Plan. No effects from the DHSP would occur.

4.20.6 Alternative 4 – Proposed Solar Project

The project is expected to occur in compliance with all applicable water quality standards and waste discharge requirements, as presented in Section 3.20.2 of this EIS. Key standards and requirements relevant to water resources effects of the project include, but are not limited to, those listed below.

- Streambed Alteration Agreement (SAA) from the California Department of Fish and Game (CDFG) for alterations to state-jurisdictional streambeds
- Clean Water Act (CWA) Section (§) 404 permit from the U.S. Army Corps of Engineers (USACE), if a determination of USACE jurisdiction is made for the project site
- CWA §402 National Pollutant Discharge Elimination System (NPDES) permit from the U.S. Environmental Protection Agency (USEPA) for discharge of pollutants
- CWA §401 Water Quality Certification (WQC) from the Colorado River Basin Regional Water Quality Control Board (RWQCB) for the discharge of dredged or fill materials

All applicable water quality standards and waste discharge requirements are presented in Section 3.20.2 of this EIS. Mitigation Measure (MM) WAT-1 (Demonstrate Compliance with Water Quality Permits), presented below under the "Mitigation Measures" heading, requires the project owner to demonstrate compliance with all applicable permitting requirements prior commencing construction, which will ensure that the project is in compliance with all applicable water quality permits and waste discharge requirements associated with construction, operation, and decommissioning activities. Therefore, potential effects associated with permit compliance are the same for all three project phases, and are not addressed further in this discussion for Alternative 4.

Construction

Construction water requirements associated with the entirety of the proposed project or alternatives are summarized in Table 4.20-1, including water required for the solar facility as well as water required for the gen-tie (impacts of the gen-tie alternatives are discussed separately in Sections 4.20.10 through 4.20.14).

Table 4.20-1. Construction Water Requirements

Construction Component	Acre-Feet per Year	Total Acre-Feet
Dust Suppression	400–500	800–1,000
Concrete Batching	0.51	0.51
Total	400.51–500.51	801.02–1,001.02

1 - Per Table 2-2 (Estimated Truck Deliveries), the project would require 165 concrete truck deliveries. Assuming that each truck would carry approximately 10 cubic yards of concrete, total concrete for the project is approximately 1,650 cubic yards. Per the 1997 Uniform Building Code (UBC 1997), the maximum water-to-concrete ratio should be no more than 0.5 (see Tables 19-A-2 and 19-A-4, "Maximum Water-Cementitious Materials Ratio, By Weight, Normal-Weight Aggregate Concrete" of (UBC 1997)). Assuming the weight of concrete is 150 pounds per cubic foot and the weight of water is 62.4 pounds per cubic foot, the total water required for concrete is 22,275 cubic feet, or approximately 0.51 acre-foot.
2 - Water required for the gen-tie includes water associated with concrete batching.

As shown in Table 4.20-1, construction would require approximately 400.51 to 500.51 afy over the 24-month construction period, for a total of approximately 801.02 to 1,001.02 acre-feet. A total of three temporary storage ponds would be constructed on the project site to ensure that the

necessary water supply is available when needed. Each pond would occupy approximately three-quarters of an acre and would have a capacity of 21.5 million gallons, for a total area of 2.25 acres and a total capacity of 64.5 million gallons, or approximately 198 acre-feet. In order to maximize efficient use of the project site while also ensuring that sufficient water supply is available to the area(s) that are actively undergoing construction activities at any given time, two or three ponds would operate simultaneously, with one pond designated per every approximately 400 acres of the site that are under active site preparation or construction activities that require water. The ponds would be connected to supply wells and would be co-located with planned stormwater retention basins that would be used during project operation to address stormwater runoff, such as described in MM WAT-4 (Surface Water Protection Plan and Drainage Design Specifications). During construction of the project, the temporary storage ponds would be lined to prevent infiltration, fenced for public safety, and covered with netting to deter ravens. All applicable BMPs identified in the project's Surface Water Protection Plan (SWPP), as required by MM WAT-4, would be implemented during use of the temporary storage ponds.

Direct Effects

Groundwater Supply and Recharge

As described above, total construction water demand would be 801.02 to 1,001.02 acre-feet over a period of 24 months, or 400.51 to 500.51 afy. The Applicant's Plan of Development (POD) indicates that pending the permitting and physical feasibility of using on-site groundwater wells, construction water will either be obtained from on-site wells and/or it would be pumped from off-site wells in the project area and trucked to the project site. The project and surrounding area is underlain by the Chuckwalla Valley Groundwater Basin (CVGB), and it is reasonably assumed that the source of construction water is the CVGB, regardless of whether the water is pumped on-site or off-site. Also as described in the Applicant's POD, the Applicant will perform the necessary studies and secure the necessary permissions to install any wells required, and tests will be performed according to all best practices and established protocols to ensure water sufficiency and quality at each active well of appropriate capacity will be evaluated. Potential impacts associated with trucking are addressed in other relevant sections of this document, including Sections 4.18 (Transportation and Public Access), 4.12 (Noise and Vibration), and 4.2 (Air Resources); potential impacts associated with trucking water to the project site are discussed below, under Mitigation Measure WAT-2 (Alternative Water Source and Groundwater Offsets).

Project construction could affect groundwater supply and recharge if one of the following occurs: (1) the affected groundwater basin is in long-term overdraft conditions; (2) construction activities cause the affected groundwater basin to be in long-term overdraft conditions; (3) substantial drawdown occurs at groundwater wells in the area as a result of construction groundwater pumping; or (4) construction activities redirect natural recharge to groundwater basin(s), such as through the introduction of impervious areas that prevent infiltration. Each of these potential conditions is discussed below.

Overdraft and Drawdown. Groundwater overdraft occurs when the quantity of water removed from a groundwater basin exceeds the rate of recharge to that basin, while drawdown occurs when groundwater pumping lowers the aquifer level such that other wells in the vicinity of pumping activities experience an increased depth to groundwater, requiring greater energy to

draw the same volume of water from affected wells. Overdraft and drawdown effects may be long-term, where substantial permanent new groundwater demands are introduced, or may be short-term and seasonal, where new groundwater demand(s) are introduced but are temporary, such that the existing balance of groundwater removal and recharge is restored once the new demand(s) ceases. The discussion of groundwater resources presented in Section 3.20 of this EIS includes characterization of the current safe yield for the CVGB. As discussed in Section 3.20, there is varying expert opinions regarding the current water budget (balance) for the CVGB, and estimates range from a positive balance of 2,623 afy to a negative balance of 7,912 afy, where the negative balance indicates overdraft conditions. In the absence of long-term groundwater monitoring data, in order to address this discrepancy in expert opinion, the analysis provided in this EIS and supported by the analysis included in the WSA (Appendix E) considers a range of potential conditions of the CVGB.

As described above, construction of the project would require a water supply of 400.51 to 500.51 afy; the hydrologic budgets presented in Tables 3.20-2 and 3.20-3 (see Section 3.20) indicate that sufficient groundwater supply may or may not be available in the CVGB to meet project construction requirements without contributing to overdraft conditions. In addition, the estimated water budgets provided in Tables 3.20-2 and 3.20-3 reflect existing (baseline) environmental conditions relevant to groundwater supply availability, and do not reflect cumulative conditions within the basin. Depending on climatic conditions and pumping intensity, it is possible that groundwater pumping activities associated with project construction could contribute to temporary overdraft and/or drawdown conditions. Groundwater pumping for construction of the project would be short-term and limited specifically to the construction period of 24 months. Mitigation measures identified for the proposed DHSP and listed below would ensure that the project would not contribute to overdraft conditions, should they be present or develop during implementation of the project, and that any potential effects associated with overdraft or drawdown would be temporary and less than significant, and would reverse once project pumping activities cease. Construction of the project would not have the potential to result in long-term overdraft conditions.

- MM WAT-2 (Alternative Water Source and Groundwater Offsets) would address potential drawdown effects by avoiding pumping or over-pumping at the project's supply well(s), and by ensuring that the project does not perpetuate known or predicted overdraft conditions. By requiring use of an alternative water source during projected overdraft years, this mitigation measure would ensure that the proposed DHSP does not contribute to overdraft conditions.
- MM WAT-3 (Groundwater Drawdown Monitoring and Reporting Plan) would address potential overdraft effects by requiring comprehensive monitoring and reporting activities, as well as close coordination with the BLM and Colorado River Basin RWQCB. Monitoring and reporting actions required per this mitigation measure will enable the BLM and the RWQCB to identify how the groundwater resource behaves in response to the project, and to make management decisions accordingly.

Recharge. As described in Section 3.20, primary recharge to the CVGB occurs through percolation of runoff from the surrounding mountains, percolation of precipitation to the valley floor, and subsurface inflow from adjacent groundwater basins. Surface runoff from the surrounding mountains is largely ephemeral, with most surface water features containing flow only in direct response to precipitation events, and average annual precipitation in the area is only 3.6 inches.

The project would have no effect on precipitation rates in the area. However, the placement of permanent and temporary project features could affect the distribution of groundwater recharge across the site. Creation of new impervious surfaces associated with the project could interfere with groundwater recharge by reducing the amount of surface area through which precipitation and surface water percolates to underlying groundwater resources.

New impervious surfaces would result from the implementation of permanent project components, including the PV panels, concrete foundations, O&M facility, access roads, and substation. Soil compaction associated with access road improvements and the use of heavy equipment and vehicles across the project site could also affect recharge by reducing the rate at which water is able to percolate through the ground. In addition to permanent infrastructure, temporary construction facilities including covered assembly areas, staging areas, and temporary parking areas would also introduce new impervious areas that could affect the rate and distribution of surface water percolation/infiltration to underlying groundwater.

The placement of PV panels and foundations would likely result in site-specific redistribution of recharge rates, but is not expected to result in a substantial effect to groundwater recharge rates or quantities, such that the overall groundwater basin would be affected. Each individual PV panel is an impervious feature, but the panels would be organized into arrays with each array consisting of 12 rows of mounted PV panels; with this configuration, there would be spaces between each mounted panel where precipitation would pass through, reaching the ground below for percolation to underlying groundwater resources.

Other permanent and temporary project features mentioned above would have similar effects to groundwater recharge; site-specific alterations in the distribution of recharge patterns are anticipated to occur, but such effects would not reduce overall recharge of the CVGB. Applicant measures listed in Section 4.20.2 include a measure which requires the use of riprap to increase surface roughness and slow runoff velocities; this measure would also minimize potential adverse effects to groundwater recharge because slower runoff facilitates infiltration, thus maximizing groundwater recharge. Additionally, mitigation measures presented under the "Mitigation Measures" subheading and summarized below would minimize or avoid potential effects to groundwater recharge during construction.

- MM WAT-4 (Surface Water Protection Plan and Drainage Design Specifications) requires the implementation of BMPs which would maximize groundwater recharge, such as use of high-roughness groundcover and use of common drainage basin(s) or depression(s) where runoff would collect.

Construction Site Dewatering. Construction of the project would require excavation activities that may encounter shallow groundwater and require construction site dewatering activities. Perched or shallow groundwater may be ephemeral in nature (occurring in direct response to precipitation events), or it may be recharged by percolation from surface water and/or nearby saturated subsurface zones. Perched groundwater is essentially a subsurface zone of saturation that is separated from the main groundwater table by a typically impermeable divide. It is not possible to quantify the likelihood of encountering perched groundwater because it is not part of the main groundwater resource and would not be detected in typical groundwater monitoring activities. If project excavation results in the unexpected encountering of perched groundwater, the local groundwater supply could be adversely affected as a result of directly encountering construction vehicles and equipment, and encountering the potentially hazardous materials such as

motor oil and lubricating fluids required to operate vehicles and equipment, and/or the local groundwater supply could be adversely affected due to uncontrolled release of groundwater onto the surface. Measures presented under the "Mitigation Measures" subheading and summarized below would minimize or avoid potential effects associated with construction site dewatering.

- MM WAT-5 (Construction Site Dewatering Management) would ensure that if perched groundwater is unexpectedly encountered during project construction, dewatering activities would occur in compliance with the California Stormwater Quality Association's (CASQA) California Stormwater BMP Handbook for Construction, or other similar guidance document supported by the BLM. Dewatering operations are practices that manage the discharge of pollutants when non-stormwater and accumulated precipitation must be removed from a work location so that construction work may be accomplished; dewatering practices must occur in compliance with laws and regulations, and require approval of the RWQCB (CASQA 2003).

Water Supply Reliability. Section 3.20 of this EIS provides a discussion of Senate Bills 610 and 267, which require detailed analysis of water supply availability for certain types of large development projects. In accordance with California Water Code, as amended by SB 610 and SB 267, a Water Supply Assessment (WSA) has been prepared for the project and is included as Appendix E to this EIS. The WSA presents detailed analysis of water supply availability projections under normal-year, single-dry year, and multiple-dry year conditions. As projected in Tables WSA-9 through WSA-15 and based on assumptions presented in Section 4.6 of the WSA, overdraft conditions could occur during implementation of the proposed DHSP. Such conditions would occur regardless of the project and would recover over the lifetime of the project in response to anticipated water usage associated with other projects in the basin; therefore, with consideration of the assumptions described in the WSA, overdraft conditions in the CVGB are anticipated to be temporary. In addition, construction of the DHSP would include the implementation of mitigation measures to avoid project-related contribution to overdraft conditions and potential water supply reliability effects. Measures relevant to water supply reliability are presented under the "Mitigation Measures" subheading and summarized below.

- MM WAT-2 (Alternative Water Source and Groundwater Offsets) would avoiding pumping or over-pumping at the project's supply well(s), and ensure that the project does not perpetuate known or predicted overdraft conditions.
- MM WAT-3 (Groundwater Drawdown Monitoring and Reporting Plan), previously mentioned, would require comprehensive groundwater monitoring and reporting actions during project pumping activities, including close coordination with regulatory agencies and response actions to address detected adverse effects.
- MM WAT-6 (Drought Water Management and Water Conservation Education Programs) would adjust the project's water use under severe drought conditions, and ensure associated training of project operators and employees.

As noted, Mitigation Measures WAT-2, WAT-3, and WAT-6 would prevent project-related contribution to overdraft conditions by prohibiting groundwater pumping during projected overdraft years, requiring the use of a water source that is not the CVGB during years that the CVGB is projected to be affected by overdraft conditions, ensuring the monitoring of groundwater and collecting of groundwater data in order to characterize the CVGB and make management decisions accordingly, and ensuring that project operators and employees are aware of the project's water requirements and the restrictions associated with groundwater use to meet those

requirements. Sufficient water supply is anticipated to be available for the project, and implementation of the project would not result in adverse effects to water supply reliability. Please see the WSA presented as Appendix E for further discussion of water supply reliability.

Colorado River Water. As discussed in Section 3.20 (see "Colorado River Accounting Surface"), groundwater pumped from the CVGB at or below an elevation of 234 feet amsl can be considered recharge from the adjudicated Colorado River. According to the Colorado River Board of California (CRBC), municipal, industrial, and recreational water users found to be using Colorado River water, through Accounting Surface delineations, without a Colorado River water right may be eligible to contract for water from the Lower Colorado Water Supply Project (CRBC 2000). Also as described by the CRBC, if a well or pump extends into the Accounting Surface for the purpose of extracting water, then a valid water contract is required from the Secretary of the Interior, through its agent, the Bureau of Reclamation (CRBC 2003).

The discussion presented under "Groundwater Level Trends" in Section 3.20 indicates that groundwater levels in the Hayfield Planning area, including the CVGB and the project site, range from the ground surface to 400 feet below ground surface (bgs). Discussion of groundwater monitoring data collected in the general vicinity of the DHSP site, presented under "Colorado River Accounting Surface" in Section 3.20.2, suggests that static groundwater elevations in the project area are well above the elevation of the Colorado River Accounting Surface, indicating the groundwater pumped at the project site would not result in the production of allocated Colorado River water.

Additionally, the DWR reported in the latest Bulletin 118 Update (2004) that the upper 100 feet of saturated sediments in the CVGB are estimated to have approximately 900,000 acre-feet of groundwater in storage, as based on the 1975 version of DWR Bulletin 118 (DWR 2004). Based on this 1975 estimation, the upper four feet of saturated sediments between the assumed water surface elevation of 230 feet amsl (noted above) and the Colorado River Accounting Surface could potentially contain 36,000 acre-feet of water, assuming 900,000 acre-feet in the upper 100 feet, divided by 100 feet, then multiplied by four feet (SCE 2010). These estimates suggest that there is sufficient groundwater in storage above the Colorado River Accounting Surface to meet the project's construction water requirements of 400.51 to 500.51 afy. Groundwater in storage in saturated sediments above the Colorado River Accounting Surface is replenished by percolation of runoff from the surrounding mountains, and percolation of precipitation to the valley floor. However, although the estimates of groundwater storage described above indicates that sufficient water is available in storage above the Colorado River Accounting Surface to meet the needs of the proposed DHSP, this discussion is based on DWR data from 1975 (DWR 2004), which does not consider uses of CVGB water which have developed in the 35 years since then. The calculations described above also assume that groundwater stored in the upper 100 feet of saturated sediments is distributed evenly, and that the volume in storage within a four-foot section of these sediments can been directly extrapolated from the overall storage.

In addition, although data provided in reference to the Desert Sunlight Solar Project suggest that groundwater elevations are well above the Colorado River Accounting Surface, the assumptions described above regarding saturated sediments at the project site are problematic compared to analysis of subsurface conditions provided for the Genesis Solar Energy project, which is also located within the CVGB. The Genesis analysis included preparation of hydrostratigraphic cross-sections, or diagrams and maps of subsurface materials which form distinct hydrologic

units with respect to the movement of groundwater within the CVGB, as compiled in 2009. These cross-sections indicate varying sub-surface conditions relevant to grain size and static groundwater levels (CEC 2010; see pages 944 through 946 of 1,380: *Soil and Water Figures 8, Hydrostratigraphic Cross-Section A-A', 9, Hydrostratigraphic Cross-Section B-B',* and *10, Hydrostratigraphic Cross-Section Lines*). It is plausible that the volume of water in storage within the saturated sediments above the estimated Colorado River Accounting Surface, and the distribution or availability of water stored in saturated sediments, are less than indicated by DWR the estimates described above.

In summary, comparison of available groundwater monitoring data and interpretations dated between the 1960s and as recently as 2000 suggest that static groundwater level elevations in the vicinity of the proposed DHSP site are well above the Colorado River Accounting Surface, with a buffer of more than 200 feet between groundwater elevation and the Colorado River Accounting Surface for the most recent data (year 2000) located in closest proximity to the project site (measured near Desert Center, approximately three miles south of the DHSP site), but further analysis produced in the year 2009 suggest that saturated sediments below the ground surface at the DHSP site may not be evenly distributed. Based on available information, it is considered unlikely yet possible that groundwater pumping associated with the proposed DHSP could produce water from below 234 feet amsl, which would be considered Colorado River water. Therefore, in order to address this potential and avoid the consumption of allocated Colorado River water, Mitigation Measure WAT-7, which is presented under the "Mitigation Measures" subheading and summarized below, is required.

- MM WAT-7 (Colorado River Water Supply Plan) would ensure that if the project results in pumping of any groundwater that would be replaced by Colorado River water, conservation actions would be implemented to "replace" the groundwater on an acre-foot by acre-foot basis, equating to a ratio of 1:1.

Surface Water and Drainage Patterns

As described in Section 3.20, existing drainage patterns on the project site are characterized by ephemeral drainages which contain water only after precipitation events sufficient to produce runoff. Project construction would alter surface water drainage patterns across the project site through the implementation of infrastructure and components such as the temporary water storage ponds described above, the PV arrays and access roads, and soil compaction required to install these features. Construction of the project would include both temporary and permanent disturbance to the site; temporary disturbance would result from trenching for electrical conduit, construction staging areas, concrete batch plant, and temporary access roads, while permanent disturbance would result from construction of access roads, the substation and O&M facility, parking areas, and equipment pads.

Alterations to drainage patterns on and surrounding the project site during the construction phase could result in erosion and/or flooding effects on- or off-site. Encroachment of a project structure into a stream channel or floodplain could result in flooding of or erosion damage to the encroaching structure, diversion of flows and increased flood risk for adjacent property, or increased erosion on adjacent property. Earthmoving activities would occur within and/or adjacent to on-site drainages only where permitted for permitted road crossings, trenching, and restoration work. In addition, it is anticipated that some project features would be placed in areas subject to periodic overland flow and/or broad, ephemeral washes. Compliance with required

laws and regulations described in Section 3.20 would minimize the project's potential effects on the drainage patterns of the area.

As described in Section 3.20.2 under "Surface Water Resources," the Desert Sunlight Solar Farm project, which is located adjacent to the north of the DHSP site, had initiated construction activities at the time of publication of the Notice of Intent for DHSP, and the initial stages of the Desert Sunlight project have included the construction of a perimeter fence and earthen berm along the project boundary. The berm surrounds a water storage and evaporation pond, both of which will be removed following construction of the Desert Sunlight project; the berm is not anticipated to interfere with surface water flows onto the DHSP site.

The DHSP site is located in an area that has been identified by the DWR as an "Awareness Floodplain," or an area that is considered prone to flooding but has not been mapped by FEMA. In accordance with Riverside County's Floodplain Management Ordinance 458, development within the Awareness Floodplain is required to comply with specific guidelines designed to avoid flood hazards associated with the placement of infrastructure within areas prone to flooding; such guidelines are summarized in Section 3.20 under the subheading "Riverside County Floodplain Management Ordinance 458". As described above and in compliance with MM WAT-1 (Demonstrate Compliance with Water Quality Permits), the project owner shall demonstrate compliance with all applicable permitting requirements prior to commencing construction; this includes permit(s) for development within the Awareness Floodplain for compliance with Ordinance 458.

As described in the analysis of groundwater recharge effects presented under "Groundwater Supply and Recharge," construction of the project would include soil compaction associated with access road improvements and the use of heavy equipment and vehicles across the project site. Soil compaction could increase surface water runoff rates and quantities, particularly during a large (100-year) storm event. The conclusions of hydrologic, hydraulic, sediment transport, and scour analyses conducted on the Desert Sunlight Solar Farm (DSSF) site (incorporated by reference in Section 1.11), adjacent to the north of the proposed DHSP site, are considered applicable to the DHSP site due to the close proximity, and the fact that both projects would employ solar PV technology and associated infrastructure. Therefore, following is a summary of conclusions regarding how the development of a solar PV project in the proposed DHSP area could result in adverse effects associated with soil compaction and stormwater runoff:

- Without the implementation of mitigation measures, solar development construction would increase stormwater peak-flow rates and velocities both on site and off site, particularly under 100-year and 10-year storm conditions;
- De-compacting soils in areas between panel arrays would help to maintain pre-development hydraulic conditions, particularly as related to the potential for flooding on or off site;
- Construction of features such as basins with riprap protection and/or detention basins would retain excess stormwater flow resulting from the project;
- Construction of PV arrays would include placement of foundations which would be subject to scour, particularly following a 100-year storm event; placement of riprap at the base of each support structure would help reduce the effects of local scour and decrease runoff velocities; and
- Construction of the solar development would apply consistent soil type, compaction, and grading patterns across the site, in comparison with existing conditions, which are marked by areas

of relatively inactive sediments ("desert pavement") as well as more active areas characterized by finer sand and gravel; these changes would likely create a geologic environment conducive to the formation of shallow channels up to two feet or less in depth (i.e., long-term scour), mitigable by periodic monitoring to identify changes to the site grading and maintenance activities as/if needed to restore design conditions (AECOM 2010).

Section 1.2.10 (Erosion Control and Stormwater Drainage) of the Applicant's POD for the project describes that with the exception of the inverters and transmission facility, solar facility development will maintain drainage patterns where possible, with water exiting the site in existing natural contours and flows. In addition, impervious groundcover will be minimized to the inverter and transmission cement pad and a small parking area, in order to maintain existing drainage patterns and infiltration throughout the photovoltaic panel field. Existing small to moderate ephemeral washes will remain intact at locations capable of being traversed by installation equipment. Where paved roads cross larger ephemeral washes, culverts will be constructed to withstand the 100-year, 24-hour storm event. Where unpaved roads cross washes, a slight grading of the channel bank will allow vehicles to cross the wash. To ensure that these project design features are implemented to effectively minimize potential effects of project construction to surface water and drainage patterns, mitigation measures for project construction are required, as presented under the "Mitigation Measures" subheading and summarized below.

- MM WAT-8 (Flood and Erosion Structure Damage Protection) would ensure that permanent project features are designed per applicable floodplain development guidelines and maintained to avoid adverse impacts to stormwater runoff.
- MM WAT-1 (Demonstrate Compliance with Water Quality Permits) would ensure that the project occurs in compliance with all applicable laws and regulations, including as relevant to drainage pattern alterations.
- MM WAT-4 (Surface Water Protection Plan and Drainage Design Specifications) would ensure that specific BMPs are implemented during project construction to address the potential for increased stormwater runoff and erosion on and off site, including through de-compaction of soils on the project site.

State Jurisdictional Drainages. Surface water and drainage patterns could be adversely affected if jurisdictional drainages are disturbed or altered as a result of project construction. As described in Sections 3.3 (Biological Resources – Vegetation) and 3.4 (Biological Resources – Wildlife) of this EIS, designated jurisdictional drainages are located throughout the project site. Aspen has calculated the total acreage of state-jurisdictional streambeds and adjacent riparian habitat as 113 acres within the proposed solar generator site. Each of the generator tie-line alternatives would affect a limited additional acreage of state-jurisdictional streambeds or woodland vegetation, depending on the specific locations of access roads, transmission line structures, and work sites. Potential impacts of the project to jurisdictional drainages are addressed in Sections 4.3 (Biological Resources – Vegetation) and 4.4 (Biological Resources – Wildlife) of this EIS.

Stormwater Drainage Systems

No stormwater drainage system exists at the project site. Construction of the project would include implementation of a Surface Water Protection Plan (SWPP), in compliance with MM WAT-4. The SWPP will specify BMPs to minimize and/or avoid potential effects associated with stormwater runoff. As described above, construction of the project would include imple-

mentation of numerous actions to minimize increases in stormwater runoff quantity and velocity; the project is not expected to create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems. There is potential for construction of the project to contribute sources of polluted runoff if an accidental leak or release of harmful materials were to occur during construction activities; potential water quality effects are discussed in detail below (see "Water Quality").

Flood Hazard Areas

As described in Section 3.20.2 (see "Surface Water Resources"), the project site and surrounding area are designated by FEMA as Flood Zone D, or areas with "possible but undetermined flood hazards," where no flood hazard analysis has been conducted. According to FEMA, development is permitted in Flood Hazard Areas provided that the development complies with local floodplain management ordinances. The *Preliminary Flood Plain & Hydrology Analysis* prepared for the project indicates that surface water flows resulting from a 100-year storm event in the project area can exceed 1,800 cubic feet per second, and flow depth would not exceed three to five feet (PHB & Associates 2009). All applicable floodplain management ordinances would be fully complied with in accordance with FEMA's regulations on development in Flood Hazard Areas. The permanent aboveground features associated with the project would be designed and engineered to withstand potential flooding and erosion hazards. Mitigation measures presented under the "Mitigation Measures" subheading and summarized below would avoid potential effects of project construction associated with Flood Hazard Areas.

- MM WAT-1 (Demonstrate Compliance with Water Quality Permits) would ensure that the project occurs in compliance with all applicable laws and regulations.
- MM WAT-4 (Surface Water Protection Plan and Drainage Design Specifications) would ensure that specific BMPs are implemented during project construction.
- MM WAT-8 (Flood and Erosion Structure Damage Protection) would ensure that permanent project features are designed and constructed per applicable development guidelines.

Water Quality

Construction, operation and maintenance, and decommissioning of the project is expected to be consistent with all beneficial uses and water quality criteria defined in the Basin Plan, as discussed in Section 3.20 of this EIS.

Degradation of surface water quality and/or groundwater quality could occur through the effects of sedimentation, and/or through the accidental release of hazardous materials. Soil-disturbing activities that would occur during project construction, including excavation and grading, would have the potential to result in soil erosion (transport) and sedimentation (delivery) that could degrade water quality. This impact would be most likely if a storm event occurs during construction activities, while disturbed soils are exposed and/or have not yet been re-vegetated.

In addition to the potential effects of erosion and sedimentation, the accidental release of hazardous materials during construction of the project could result in water quality degradation within and downstream of the site. Potentially hazardous materials that may be used and/or produced during construction include but are not limited to the following: diesel fuel, gasoline, lubricant oils, hydraulic fluid, antifreeze, transmission fluid, lubricant grease, cement slurry, and other

fluids required for the operation of construction vehicles and equipment. Motorized equipment used at the project site during construction could leak hazardous materials, such as motor oil, transmission fluid, or antifreeze, due to inadequate or improper maintenance, unnoticed or unrepaired damage, improper refueling, or operator error.

Direct contact with potentially hazardous materials could result from a spill or leak that occurs directly above or within the bed and banks of a flowing stream or waterbody. Because surface water on the project site is ephemeral in nature, direct contamination as a result of accidental release is considered unlikely, unless a precipitation event occurs during active construction activities. Indirect contamination of surface water could occur if a potentially harmful or hazardous material is released into a dry stream bed or wash and is subsequently transported through runoff during a storm event, eventually making contact with perennial flowing water. Groundwater resources could also be contaminated through indirect contact with potentially harmful or hazardous materials. This could occur if an accidental spill of harmful materials is allowed to leach through the ground surface to underlying groundwater resources, or if construction-related excavation activities encounter perched groundwater and direct contact with hazardous materials occurs.

The DHSP would use herbicides for weed control as appropriate, as outlined in the Integrated Weed Management Plan in Appendix C.10. Use of herbicides would be in accordance with the measures and standard operating procedures in the BLM's Herbicide PFEIS. As described in Chapter 1, Section 1.9.1, the DHSP EIS is tiered to the Herbicide PFEIS. Complying with the measures and standard operating procedures in the Herbicide PFEIS, MM PHS-9 (use licensed herbicide applicator), and the mitigation measures below (MM WAT-9, MM WAT-1, MM WAT-4, and MM WAT-5) would avoid potential effects of herbicides on water quality.

Section 1.2.17 (Spill Prevention and Containment) of the Applicant's POD for the project states that a Spill Prevention Control and Countermeasure Plan (SPCC) will be prepared and implemented during construction of the project. The construction SPCC Plan will include spill prevention and countermeasures procedures including but not limited to the following: a spill record (if applicable), analysis of potential spills, description of containment facilities, fill and overfill prevention facilities, spill response procedures, personnel training and spill prevention. The project's substation would include equipment that required containment in the case of a spill or accidental release of hazardous materials, and the substation pad will be designed to capture any spills of insulator material; the solar facility is not anticipated to require containment structures. Construction and maintenance vehicles will be maintained in accordance with manufacturer recommendations to minimize the risk of vehicle spills.

Mitigation measures presented under the "Mitigation Measures" subheading and summarized below would avoid potential effects of project construction to water quality.

- MM WAT-9 (Accidental Spill Control and Environmental Training) requires implementation of BMPs to avoid potential water quality impacts associated with accidental spill(s) or release(s) of materials during construction. This training will include but is not limited to hazardous materials handling procedures for reducing the potential for a spill during construction, and an emergency response program to ensure quick and safe cleanup of accidental spills.
- MM WAT-1 (Demonstrate Compliance with Water Quality Permits) ensures that construction of the project would occur in compliance with all applicable water quality regulations.

- MM WAT-4 (Surface Water Protection Plan and Drainage Design Specifications) specifies BMPs to be included in the project's SWPP that would minimize or avoid potential water quality impacts by requiring the implementation of erosion control measures such as use of high-roughness groundcover and the strategic placement of straw wattles and silt fences. The SWPP would achieve the same objectives as a SWPPP under the Clean Water Act, and the SWPP may substitute for a SWPPP if the project is not subject to Section 402 of the CWA, further ensuring that significant water quality impacts would not occur.
- MM WAT-5 (Construction Site Dewatering Management) ensures that if dewatering activities are required during project construction, they would occur per approved guidelines, thus minimizing the potential for adverse water quality impacts to occur.

Indirect Effects

Indirect effects are those effects "…which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density, or growth rate, and related effects on water and air and other natural systems, including ecosystems" (40 CFR 1508.8(b)).

Potential indirect effects to water resources associated with construction of the Alternative 4 could occur if one of the scenarios described below is realized as a result of project construction.

- Groundwater pumping associated with construction of the proposed project decreases outflow from the CVGB to hydrologically connected groundwater basin(s), resulting in decreased water availability in the affected basin(s).
- An accidental spill or leak of hazardous materials occurs and the material(s) is left on the ground surface, where it leaches through soils to underlying groundwater resources, resulting in groundwater contamination.
- Soil erosion and sedimentation generated on-site as a result of ground disturbance during construction of the proposed project is not contained on-site and is subsequently transported off-site through stormwater runoff, resulting in degradation of downstream water quality.

Compliance with the mitigation measures summarized above and presented below under the "Mitigation Measures" sub-heading would minimize or avoid the potential for the indirect effects described above to occur as a result of construction of Alternative 4.

Operation and Maintenance

Section 2.4.3 (Structures and Facilities) describes that a double-pass reverse osmosis (RO) system and demineralization evaporation pond would be used to treat locally pumped groundwater by decreasing concentrations of total dissolved solids (TDS) to a level acceptable for application on the panels. The RO system would produce up to approximately 20 gallons per minute (gpm) of low-TDS water, as well as approximately 9 gpm of "reject water," or brine water that is too high in TDS content to be applied to the PV panels during washing activities. As such, approximately 45 percent of water produced by the RO system would be reject water. The reject water would be piped to an evaporation pond encompassing approximately one acre, where the liquid would evaporate, leaving salts and minerals that would be cleaned out and disposed of at an

appropriate facility as needed. Operational water requirements associated with the project are summarized in Table 4.20-2.

Table 4.20-2. Operational Water Requirements

Project Component	Acre-Feet per Year
Panel Washing	18–27
Reverse Osmosis Reject Water	8–12
O&M Facilities and Fire-Fighting	0.02[1]
Total	26.02–39.02

1 - As described in Section 2.4.5 (Operations and Maintenance Activities), under "Operations Equipment," a permanent, above-ground 5,000-gallon water storage tank would be used for O&M tasks and facilities, including on-site fire-fighting; 5,000 gallons converts to approximately 0.02 acre-feet. It is anticipated that the storage tank would need to be re-filled on an annual basis.

As shown in Table 4.20-2, the project's total operational water requirement would be approximately 26.02 to 39.02 afy.

Operation and maintenance of the project would include routine preventative maintenance as well as corrective maintenance activities, as needed. As described in the Applicant's POD, the project will be maintained using a Computerized Maintenance Management Software (CMMS) package, vendor and contractor recommendations, and good engineering practices to plan and implement the component preventive maintenance program. Potential effects from operation and maintenance of the project to water resources are discussed below.

Direct Effects

Groundwater Supply and Recharge

Operation of the project would require a water supply of 18 to 27 afy for washing PV panels, assuming 1.1 gallons of water for each PV panel and a washing schedule of two to three times per year. As with construction of the project, it is anticipated that operational water would be pumped from the underlying CVGB using on-site supply wells, or it would be pumped from off-site wells within the CVGB and trucked to the project site. Potential impacts associated with trucking the proposed DHSP water supply to the site are discussed under Mitigation Measure WAT-2 (Alternate Water Source and Groundwater Offsets).

Overdraft and Drawdown. There is differing expert opinion regarding the current budget of the CVGB, and whether the basin is currently affected by overdraft conditions. Potential budget scenarios are presented in Tables 3.20-2 and 3.20-3, each of which is assessed in this impact analysis. It is anticipated that the CVGB will be overdrafted during the lifetime of the project, and that such effects would occur regardless of the proposed DHSP's water requirements. In order to ensure that the project does not contribute to overdraft conditions in the CVGB, MM WAT-2 requires the use of an alternative water source and/or replacement of CVGB used during any year that the CVGB is projected to be in overdraft, thus ensuring that the project does not contribute to the presence of overdraft in this basin. In addition, MM WAT-3 requires that the project's Groundwater Monitoring and Reporting Plan would be implemented for at least the first five years of the project, beginning with the onset of construction. As specified in MM WAT-3, annual groundwater monitoring data reports will be submitted by the project owner to the BLM and the Colorado River Basin RWQCB, and corrective action(s) will be required if these reports indicate groundwater trends such as overdraft or drawdown.

Recharge. Operation of the project would not introduce new impervious surfaces (not previously introduced during construction of the project) and would not further compact soils on the project site such that groundwater recharge would be adversely affected. The presence of PV panels over the lifetime of the project could affect localized runoff patterns due to "drip line" effects, which occur when surface runoff in direct response to precipitation events is concentrated along the lowest edge of PV panel arrays. These localized effects to surface water runoff patterns would have no effect on infiltration rates or groundwater recharge

Construction Site Dewatering. Operation of the project would not include ground-disturbing activities that could result in encountering shallow or perched groundwater resources; dewatering activities would not be necessary.

Water Supply Reliability. As noted above, it is anticipated that the project would require an operational water supply of 26.02 to 39.02 afy, which includes high-TDS reject water that would be produced through the RO system. The WSA included as Appendix E indicates that overdraft conditions could occur during implementation of the proposed project and alternatives, but such conditions would be temporary, and would likely occur regardless of the project. Sufficient water supply is anticipated to be available for the project, and implementation of the project would not result in adverse effects to water supply reliability.

Colorado River Water. As with construction, operation of the project would include the potential to pump groundwater from below the Colorado River's Accounting Surface of 234 feet amsl. Groundwater monitoring and reporting activities required per MM WAT-3 (Groundwater Drawdown Monitoring and Reporting Plan) would facilitate the determination of whether operational water is pumped from below the Accounting Surface and if so, that conservation actions required per MM WAT-7 (Colorado River Water Supply Plan) would be implemented.

Surface Water and Drainage Patterns

Operation and maintenance of the project would include the routine maintenance and occasional repair (as needed) of infrastructure installed during the construction period, including occasional re-grading and/or re-graveling of access roads. Operation and maintenance would not introduce new infrastructure or alter existing surface water and drainage patterns beyond what is completed during the construction period. As described above (see "Groundwater Recharge"), the PV panels and arrays may result in a "drip line" effect where runoff from the panels and arrays is concentrated on the lowest edge of the infrastructure, but this effect would occur as localized drainage pattern alternations. Operation and maintenance would not substantially alter existing drainage patterns or result in substantial erosion, siltation, or flooding on or off site.

State Jurisdictional Drainages. Operational effects of the project to jurisdictional drainages are addressed in Sections 4.3 (Biological Resources – Vegetation) and 4.4 (Biological Resources – Wildlife) of this EIS. Potential effects during operation and maintenance are anticipated to be less than during construction due to a decreased necessity for earth-disturbing activity.

Stormwater Drainage Systems

Operation and maintenance of the project would not introduce any new stormwater drainage system(s). As with the potential construction effects described above, operation and maintenance activities would not create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems.

Operational activities would include regular inspection and maintenance of project infrastructure. The O&M building would include a septic system and leach field, which would be permitted through Riverside County, and would be pumped regularly, with waste transported off site for disposal by a licensed waste treatment contractor. Panel washing activities would occur two to three times per year, but only the quantity of water required to remove dirt and debris from the panels would be applied (estimated to be 1.1 gallons per panel). Operation and maintenance of the project would not provide substantial additional sources of polluted runoff.

Flood Hazard Areas

The *Preliminary Flood Plain & Hydrology Analysis* prepared for the project area determined that surface water flows resulting from a 100-year storm event exceed three to five feet in depth (PHB & Associates 2009). The presence of project infrastructure during the operational phase of the project may result in scouring effects and/or localized re-direction of surface flow; however, as described above and in compliance with MM WAT-4 (Surface Water Protection Plan and Drainage Design Specifications) and MM WAT-8 (Flood and Erosion Structure Damage Protection), project features would be designed to withstand flood flows and BMPs would be implemented during construction to avoid or minimize potential effects of flooding. Operation and maintenance of the project would not introduce new infrastructure or activities with the potential to impede or redirect flood flows such that new effects would occur.

Water Quality

Degradation of surface water quality and/or groundwater quality could occur through the effects of sedimentation, and/or through the accidental release of hazardous materials. Soil-disturbing activities that would occur during operation and maintenance of the project would be minimal, characterized by road improvements or repairs as necessary to maintain access throughout the site, and the transport of vehicles and equipment throughout the site as necessary to regularly inspect project infrastructure. These activities would not introduce substantial new potential to result in soil erosion (transport) and sedimentation (delivery) that could degrade water quality. Regarding the potential for operational and maintenance activities to result in the accidental release of potentially hazardous materials, as described above, project infrastructure would be regularly inspected to minimize and/or avoid the potential for such leaks to occur.

Over the lifetime of the project, panel-washing activities would occur two to three times per year, requiring an estimated 26.02 to 39.02 afy of water, which includes the high-TDS reject water that would be generated by the RO system. This operational water would be pumped from the CVGB using the same groundwater well(s) used during construction of the project. It is anticipated that water used to wash the PV panels during project operation would need to be of a certain quality, and water obtained from the CVGB may need to be treated prior to application on the panels. However, the use of water to clean panels during operation would not degrade surface or groundwater quality in the area.

Operation and maintenance of the project would not introduce substantial new potential for water quality effects to occur.

Indirect Effects

The types of indirect effects to water resources that could occur as a result of operation and maintenance of Alternative 4 are the same as described above under "Construction," but are less likely to occur during operations and maintenance due to the decreased water supply requirements, decreased ground-disturbing activities, and decreased use of hazardous materials. The same mitigation measures described above would be applied to minimize or avoid potential indirect effects to water resources.

Decommissioning

Decommissioning of the project would occur in compliance with a decommissioning plan to be developed by the Applicant and submitted to the BLM for review and approval (enXco 2011a). Decommissioning of the project may range from temporary "mothballing" to complete removal of equipment and restoration of the land to BLM approved specifications (enXco 2011a). For the purposes of this analysis of effects on water resources, it is assumed that decommissioning would include complete removal of project infrastructure and restoration of the site.

Direct Effects

Groundwater Supply and Recharge

No water requirements associated with decommissioning the project have been identified. However, it is reasonably anticipated that a water source would be required for soil conditioning and dust control associated with earth-disturbing activities that would occur during decommissioning, including but not limited to the removal of concrete foundations, backfilling of foundation holes, and restoration of natural grade. A water source for decommissioning has not been identified; however, it is also reasonably assumed that the same water source used during construction would be used to meet decommissioning requirements. Therefore, for the purposes of this analysis it is assumed that water for decommissioning would be obtained from the CVGB.

Overdraft and Drawdown. Decommissioning would occur after an estimated 30- to 50-year lifespan of the project; prior to use of CVGB water for decommissioning purposes, an updated assessment of the basin's condition with regards to overdraft should be conducted. It is assumed that potential effects of decommissioning to overdraft and drawdown would be similar to the effects described above for project construction. It is anticipated that the decommissioning plan would include measures and BMPs to monitor groundwater level trends and avoid or minimize overdraft and drawdown.

Recharge. As described in the discussion of construction effects, new impervious surfaces resulting from new infrastructure could affect the rate and distribution of surface water percolation/infiltration to underlying groundwater; removal of this infrastructure during decommissioning activities would facilitate restoration of pre-construction recharge rates and patterns. Restoration of the site would include returning the site as close as reasonably possible to pre-construction conditions suitable for current adjacent land. Therefore, potential effects of decommissioning activities to groundwater recharge are anticipated to be beneficial.

Construction Site Dewatering. Decommissioning of the project would likely include excavation activities to remove infrastructure and foundations across the project site. These excavation activities would include the potential to encounter perched groundwater, or unconfined shallow

groundwater, which would require dewatering activities to avoid potentially adverse effects to local groundwater resources. These effects would be the same as described above for construction of the project.

Water Supply Reliability. Although no water supply requirements have been identified for decommissioning of the project, it is reasonably assumed that water would be required for soil conditioning and dust control. The WSA included as Appendix E to this EIS indicates that sufficient water supply is anticipated to be available for the project, and the project would not result in adverse effects to water supply reliability. If decommissioning results in pumping of any groundwater that would be replaced by Colorado River water, conservation actions would be implemented to "replace" the groundwater on an acre-foot by acre-foot basis per MM WAT-7.

Surface Water and Drainage Patterns

Decommissioning activities would include removal of all infrastructure introduced during the construction phase, and the removal of infrastructure from the project site would facilitate restoration of the existing, pre-construction drainage patterns, characterized by ephemeral drainages which contain water only after precipitation events sufficient to produce runoff. The decommissioning plan that would be implemented for the project is anticipated to include BMPs to avoid adverse effects to surface water and drainage patterns during the decommissioning process, and to restore drainages across the site. Such BMPs may include erosion control measures to avoid and/or minimize potential adverse effects associated with alterations to surface water drainage patterns that could result in erosion or siltation on or off site. Decommissioning of the project would not substantially alter the existing drainage pattern of the site or area or substantially increase the rate or amount of surface runoff such that erosion, siltation, or flooding on or off site would occur, and no additional mitigation measures are required.

State Jurisdictional Drainages. Decommissioning effects of the project to jurisdictional drainages are addressed in Sections 4.3 (Biological Resources - Vegetation) and 4.4 (Biological Resources - Wildlife) of this EIS. Decommissioning effects are anticipated to be greater than operational effects due to an increased need for earth-disturbing activities to remove project infrastructure.

Stormwater Drainage Systems

Decommissioning of the project would not introduce a new stormwater drainage system and would not create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems. Hazardous materials would be handled and disposed of during decommissioning activities, and would introduce the potential for adverse water quality effects to occur. However, all hazardous and potentially hazardous materials would be handled, stored, and disposed of in compliance with a decommissioning plan to avoid and/or minimize adverse effects, and decommissioning activities would therefore not provide substantial additional sources of polluted runoff.

Flood Hazard Areas

Decommissioning of the project would remove infrastructure from the site, and would remove potential effects introduced during construction of the project associated with placing structures such that flood flows could be impeded or redirected.

Water Quality

Degradation of surface water quality and/or groundwater quality could occur through the effects of sedimentation, and/or through the accidental release of hazardous materials. Soil-disturbing activities that would occur during decommissioning of the project, including excavation and grading, would have the potential to result in erosion and sedimentation that could degrade water quality. This effect would be most likely to occur if a storm event occurs during decommissioning activities, while disturbed soils are exposed and/or have not yet been re-vegetated. It is anticipated that the project's decommissioning plan would require BMPs and stipulations similar to those applied during construction activities, including as related to the proper handling and storage of potentially hazardous materials. Potential water quality effects would be similar during decommissioning as during construction.

Indirect Effects

The types of indirect effects to water resources that could occur as a result of decommissioning Alternative 4 are the same as described above under "Construction." The same mitigation measures described above and presented below would be applied to minimize or avoid potential indirect effects to water resources.

Mitigation Measures

The mitigation measures listed below are required to reduce effects related to water resources.

MM WAT-1 Demonstrate compliance with water quality permits. Prior to construction, the project owner shall submit satisfactory evidence to the BLM and the Riverside County Department of Planning and Building, as applicable, that all agencies with jurisdiction over the project have been contacted and whether or not each agency requires a permit associated with water resources for the project. Such agencies and associated permits include but are not limited to those listed below.

- California Department of Fish and Game (Streambed Alteration Agreement)
- U.S. Army Corps of Engineers (Clean Water Act Section 404)
- State Water Resources Control Board / Colorado River Basin Regional Water Quality Control Board (Clean Water Act Section 402/401 permits; Waste Discharge Requirements)

Where a permit is required, the project owner shall provide a copy of all the conditions required by that agency to BLM, for actions on BLM lands, and to the Riverside County Department of Planning and Building, for actions on County lands. The BLM and the County, as applicable, shall review these conditions for consistency with proposed plans. During construction, the Environmental Monitor shall be aware of these other agency conditions and if non-compliance is observed, shall contact the affected agency. For post-construction measures, the Environmental Monitor shall notify the affected agency should non-compliance be observed. The project owner shall maintain and make available on site at all times an approved copy of all required permits.

MM WAT-2 Alternative Water Source and Groundwater Offsets. For any year during which it is projected that the Chuckwalla Valley Groundwater Basin (CVGB) would be affected by overdraft conditions, the project owner shall avoid using CVGB water to meet water supply requirements associated with construction, operation and maintenance, or decommissioning of the Desert Harvest Solar Project (DHSP). The purpose of this measure is to avoid contributions of the project to overdraft conditions in the CVGB, regardless of the magnitude of the project's incremental contribution to such conditions.

This measure shall be implemented based on projections of overdraft conditions provided in Table 4.20-5 (Estimated Cumulative Budget for the Chuckwalla Valley Groundwater Basin (afy)) of this EIS and in the Water Supply Assessment (WSA) included as Appendix E, or based on revised projections of overdraft conditions provided by the project owner (or a representative of the project owner) to the BLM Hydrologist in the form of a revised WSA prepared in accordance with Senate Bill 610, and approved of by the BLM Hydrologist. The project owner may choose to revise projections of overdraft conditions if the cumulative projects scenario upon which existing overdraft projections are based changes such that certain water-consuming projects in the cumulative scenario would not occur and associated overdraft conditions also would not occur, or would be less substantial than currently projected. It is reasonable and appropriate to use projections of overdraft as the trigger for this mitigation measure, as opposed to using actual data obtained through groundwater monitoring, because the presence of overdraft requires long-term monitoring efforts in order to identify; although the BLM is presently (at the time of publication of this Final EIS) implementing a groundwater monitoring program throughout the CVGB, monitoring results that would be useful towards characterizing overdraft in the basin will not be available for several years, at least, and therefore would not be usable for the proposed project or the purposes of this mitigation measure.

The WSA included as Appendix E to the EIS projects that overdraft conditions in the CVGB may occur during each year of project operations, through 2043, to varying degrees of severity and decreasing over time. In order to ensure that the DHSP does not contribute to overdraft conditions during these projected years of overdraft, or revised projections of overdraft years provided by the project owner and approved of by the BLM, the project owner may either purchase water from an out-of-basin source, or the project owner may implement in-basin water conservation measures to replace any water consumed from the CVGB on an acre-foot by acre-foot bases. Each of these options is described below. The project owner shall verify implementation of these actions in an annual report to the BLM.

- **Out-of Basin Water Source.** The project owner may purchase water supply for the DHSP from a water purveyor which delivers non-CVGB water, such as California State Water Project water that is delivered by a purveyor in the project area, per contractual agreement between the project owner and the purveyor. Out-of-basin water sources may include water obtained through the Hayfield Lake / Chuckwalla Valley Groundwater Conjunctive Use Project administered by the Metropolitan Water District (MWD) of Southern Cali-

fornia; although the Hayfield Valley aquifer is part of the Orocopia Valley Groundwater Basin, which provides inflow to the CVGB, this Conjunctive Use Project is a managed supply under MWD jurisdiction and therefore would not be considered direct use of CVGB water. Out-of-basin water sources may include water delivered to the project site by MWD or another water purveyor from any source other than the CVGB.

- **In-Basin Water Conservation.** CVGB water may be consumed towards project purposes only if all CVGB water consumed is "replaced" on an acre-foot by acre-foot basis through implementation and/or participation by the project owner in a Forbearance and Fallowing Program within the CVGB, as described below.
  - *Implement a Forbearance and Fallowing Program*. The project owner may enter into a contractual agreement with willing land owner(s) and/or lessee(s) to fallow fields which are currently irrigated. The contract shall specify the duration of fallowing, during which time no water may be applied to the contracted field. Each field which is fallowed under this program must be located within the CVGB and must receive its water supply from the CVGB. The land owner(s) and/or lessee(s) cannot be simultaneously contracting with another entity to fallow the same fields, unless agreed upon by all parties.
  - *Participate in a Forbearance and Fallowing Program*. The project owner may participate in a program implemented within the CVGB by another entity, where such a program meets the requirements described in the preceding bullet, and each field fallowed through this collaborative effort is located within the CVGB and receives its water supply from the CVGB.

The out-of-basin water source and in-basin water conservation measures described above may be implemented individually or in congruence with each other, as is most effective to ensure that no net consumption of CVGB water occurs during years of projected overdraft conditions. The project owner shall submit an annual report to the BLM which verifies that one or more of the actions described above are implemented to ensure that no net consumption of CVGB water occurs during any year in which the CVGB is projected to be in overdraft conditions, regardless of the DHSP's incremental contributions to such conditions, and based upon either the overdraft projections identified in the WSA included as Appendix E to this EIS, or based upon revised overdraft projections produced by the project owner and approved of by the BLM Hydrologist.

The applicability of MM WAT-3 and MM WAT-7 are contingent upon how this MM WAT-2 is implemented, as described below.

- If groundwater pumped from the CVGB is used in conjunction with an out-of-basin water source and in-basin water conservation measures, the DHSP Environmental Monitor(s) shall verify that all groundwater monitoring and reporting requirements identified in MM WAT-3 (Groundwater Drawdown Monitoring and Reporting Plan) and MM WAT-7 (Colorado River Water Supply Plan) are implemented.

- If an out-of-basin water source is used to meet all of the DHSP water supply requirements and no water is pumped from the CVGB or a basin tributary to the CVGB during construction, operation and maintenance, or decommissioning of the DHSP, then MM WAT-3 and MM WAT-7 would not be necessary. Water supply provided by MWD from the Hayfield / Chuckwalla Valley Groundwater Conjunctive Use Project would be considered an out-of-basin water source despite connectivity of the Hayfield Valley and Orocopia Valley to the Chuckwalla Valley, because this program is actively managed by MWD towards the purpose of water supply reliability.

The implementation of MM WAT-2 could result in adverse environmental impacts associated with the delivery of an out-of-basin water source to the DHSP site, including effects to transportation and public access, noise, air quality, energy and minerals, climate change, and wildlife. The daily water demand during construction of the project is estimated to range from a low of 125,000 gallons per day (gpd) to a peak of an estimated 600,000 gpd. Assuming the project used 12,000 gallon trucks to transport the water, between 10 and 50 round trip truck trips per day would be required to transport the water to the site during construction. During operations, the project would use between 26 and 39 afy. This would require between 2 and 3 round-trip truck trips per day, if all water needed for project operation were trucked from offsite. Potential adverse effects to the aforementioned environmental issue areas are summarized below.

- **Transportation and Public Access.** The traffic study for the DHSP noted that the estimated truck delivery for the project varied throughout construction but was estimated to average 20 round trip truck trips each day. As stated above, the daily water demand would increase this daily truck traffic by 10 to 50 round trips. This increase in truck traffic would potentially impact the road level of service (LOS) and increase the roadway damage and hazards. However, as noted in Section 4.18.6, the only project trips relevant to the quantitative traffic analysis and to the road level of service are those that occur during the AM and PM peak traffic hours. While it is anticipated that multiple daily truck trips would be required to transport the off-site water to the DHSP site, the truck trips would be spaced throughout the day. Typical construction work schedules are expected to be 8 hours per day Monday through Friday. This would result in between 1 to 6 additional round trip truck trips per hour. Given the existing LOS, LOS A, and the estimated LOS with the DHSP, LOS B, an additional 1 to 6 round trip truck trips per hour would not be expected to reduce the level of service during the AM and PM peak traffic hours. During operations, an additional 2 to 3 round trip truck trips would be required per day and would not be expected to impact the existing LOS.
- **Noise.** Water trucks would travel north along SR-177 and then continue north along Kaiser Road to the main entrance of the project site. Water trucks would require between 10 to 50 round trip truck trips per day which would increase the hourly truck traffic by between 1 to 6 additional round trip truck trips. The additional truck trips would increase traffic noise levels along Kaiser Road which are already considered to be noticeable with the DHSP construction traffic; see Section 4.12.6. At 50 feet from the centerline of Kaiser Road, noise levels from the DHSP traffic and the additional 1 to 6 round trip truck trips per hour would be within Riverside County's conditionally acceptable range for rural residential land uses. During operations, an additional 2 to 3 round trip truck trips would be required per day and would be expected to result in a minimal increase in noise.

- **Air Quality.** Water truck trips would result in exhaust air pollutant emissions as a result of motor vehicle fuel combustion. Fugitive dust emissions would be generated from vehicle trips on paved/unpaved roads. The emissions would contribute to the exceedance of the emissions thresholds for VOC, NOx, CO, and PM10. However, with the implementation of required mitigation for the DHSP, this impact would be reduced. Mitigation measures for the DHSP would require the project owner to develop a Fugitive Dust Control Plan in compliance with SCAQMD Rule 403 to reduce PM10 and PM2.5 emissions during construction. During operations, an additional 2 to 3 round trip truck trips would be required per day and would be expected to result in a minimal increase in air emissions.
- **Energy and Minerals**. An estimated 10 to 50 round trip truck trips per day during construction and an estimated 2 to 3 round trip truck trips per day during operations, would also require the use of energy resources in the form of transportation and potentially energy used to pump the water. Fuels for the water trucks and potentially pumps are readily available in the project study area, and the consumption of such resources during construction would not constitute a substantial effect.
- **Climate Change**. Water truck trips would result in direct greenhouse gas emissions from fuel combustion during construction and operations. The total annualized direct GHG emissions from the water truck trips would occur with those of construction of the DHSP which are well below the presumptive threshold for direct emissions established in the Council on Environmental Quality's draft guidance for federal agencies; see Section 4.5.7. Therefore, the water truck trips would not result in an unavoidable adverse GHG effects.
- **Biological Resources – Wildlife**. An estimated 10 to 50 round truck trips per day during construction and 2 to 3 truck trips per day during operations would increase the potential for direct injury or mortality of wildlife by vehicles, particularly the federally and state-listed desert tortoise. Designated critical habitat for the desert tortoise occurs adjacent to the west side of Kaiser Road. However, the projected increase in truck trips during construction would not result in a substantial hourly increase in overall traffic (hourly increase of 1 to 6 round trips), and would therefore not constitute a substantial increase in effects to wildlife analyzed in Section 4.4. Similarly, an additional 2 to 3 truck trips per day during operations would not substantially increase traffic effects to wildlife (including desert tortoise).

Water transported to the project site from an off-site source would be stored in an on-site storage tank(s). If an off-site groundwater supply is used for the project, potential impacts associated with traffic, noise, and air quality would be comparable to the potential impacts associated with use of an on-site well(s), as water obtained on-site would need to be transported and delivered to specific on-site locations. If an off-site non-groundwater supply is used for the water (such as purchased from MWD or another local purveyor), potential effects associated with transporting the supply to the project site would be comparable to as described for an off-site groundwater supply.

MM WAT-3 Groundwater Drawdown Monitoring and Reporting Plan. If groundwater is to be pumped for consumptive use in this project from either an onsite well or an offsite well that extracts water from the CVGB, the project owner shall develop and implement a Groundwater Monitoring and Reporting Plan prior to the onset of construction of the project. In the preparation and implementation of this plan, the project owner shall coordinate with the BLM and with the Colorado River Basin RWQCB. The Groundwater Monitoring and Reporting Plan shall be pre-

pared by a qualified hydrogeologist and submitted by the project owner to the BLM for approval, and to the RWQCB for review and comment.

The Groundwater Monitoring and Reporting Plan shall provide detailed methodology for monitoring background and site groundwater levels, water quality, and flow. Monitoring shall be performed during pre-construction, construction, and operation of the project, with the intent to establish pre-construction and project-related groundwater level and water quality trends that can be quantitatively compared against observed and simulated trends near the project pumping wells and near potentially impacted existing private wells. The monitoring wells shall include locations up-gradient, lateral, and down-gradient of all project supply wells and a minimum of three off-site down-gradient wells. Water quality monitoring shall include annual sampling and testing for Total Dissolved Solids (TDS), which include minerals, salts, and metals dissolved in water. Water quality samples shall be drawn from project supply wells, one up-gradient well, and a minimum of two down-gradient offsite wells.

The Groundwater Monitoring and Reporting Plan shall include a schedule for submittal of quarterly data reports by the project owner to the BLM, for the duration of the construction period. These quarterly data reports shall be prepared and submitted to the BLM for review and approval, and shall include water level monitoring data (trend analyses) from all monitoring wells, including the up-gradient, lateral, and down-gradient wells described above.

Based on the results of the quarterly reports, the project owner and the BLM shall determine if the project's pumping activities have resulted in water level decline of five feet or more below the baseline trend at any of the monitoring wells, including nearby private wells. If drawdown of five feet or more occurs at off-site wells, the project owner shall immediately reduce groundwater pumping until water levels stabilize or recover, sustaining drawdown of less than five feet. Alternatively, the project owner shall provide compensation to the well owner, including reimbursement of increased energy costs, or deepening the well or pump setting. To be eligible for such compensation, a well owner must provide documentation of the well location and construction, including pump intake depth, and that the well was constructed and usable before project pumping was initiated. Compensation by the project owner to private well owner(s) for adverse effects to private wells shall be determined in coordination with the BLM as described below.

a) If groundwater monitoring data indicate that project pumping has lowered water levels below the top of the well screen, and the well yield is shown to have decreased by 10 percent or more of the pre-project average seasonal yield, compensation shall be provided by the project owner for the diagnosis and maintenance to treat and remove encrustation from the well screen. Reimbursement shall be provided at an amount equal to the customary local cost of performing the necessary diagnosis and maintenance for well screen encrustation. If with treatment the well yield is incapable of meeting 110 percent of the well owner's maximum daily demand, dry season demand, or

annual demand, the well owner shall be compensated by reimbursement or well replacement.

b) If project pumping has lowered water levels to substantially affect well yield so that it can no longer meet its intended purpose, causes the well to go dry, or causes casing collapse, payment or reimbursement of an amount equal to the cost of deepening or replacing the well shall be provided to accommodate such effects. Payment or reimbursement shall be at an amount equal to the customary local cost of deepening the existing well or constructing a new well of comparable design and yield (only deeper). The demand for water, which determines the required well yield, shall be determined on a per-well basis using well owner interviews and field verification of property conditions and water requirements compiled as part of pre-project well reconnaissance. Well yield shall be considered to be adversely affected if the well is incapable of meeting 110 percent of the well owner's maximum daily demand, dry-season demand, or annual demand, assuming the pre-project well yield documented by pre-project well reconnaissance met or exceeded these yield levels.

c) In the event that groundwater is lowered as a result of project pumping to an extent where pumps are exposed but well screens remain submerged, the pumps shall be lowered to maintain production in the well. The project shall reimburse the impacted well owner for the costs associated with lowering pumps.

d) If project-related pumping results in the lowering of groundwater levels such that well screens or pump intakes are exposed, and pump lowering is not an option, affected wells shall be deepened or new wells installed. The project owner shall reimburse the affected well owner(s) for all costs associated with deepening existing wells or constructing new wells.

The Groundwater Monitoring and Reporting Plan shall also include a schedule for submittal of annual data reports by the project owner to the BLM, for the first five years of the project (including the construction period). These annual data reports shall be prepared and submitted to the BLM for review and approval, and shall include at a minimum the following information:

- Daily usage, monthly range, and monthly average of daily water usage in gallons per day;
- Total water used on a monthly and annual basis in acre-feet; summary of all water level data; and
- Identification of trends that indicate potential for off-site wells to experience deterioration of water level.

The BLM shall determine whether groundwater wells surrounding the project site and project supply well(s) are affected by project activities in a way that requires additional mitigation and, if so, shall determine what measures are needed. After the first five years of the project, the project owner and the BLM shall jointly evaluate the effectiveness of the Groundwater Monitoring and Reporting Plan and determine if monitoring frequencies or procedures should be revised or eliminated.

The siting, construction, operation, maintenance, and remediation of any groundwater well associated with the project shall conform to specifications contained in the California Department of Water Resources Bulletins #74-81 and #74-90.

MM WAT-4 Surface Water Protection Plan and Drainage Design Specifications. A Surface Water Protection Plan (SWPP) shall be developed for the project and shall include BMPs to ensure that drainage design at the project site would minimize potential adverse effects associated with groundwater recharge, drainage pattern alterations, and water quality. The SWPP shall achieve the same objectives as a Stormwater Pollution Prevention Plan (SWPPP) under the Clean Water Act (CWA), and the SWPP may substitute for a SWPPP if the project is not subject to Section 402 of the CWA. The SWPP shall be adhered to during construction and operation of the project, as applicable. BMPs required by the SWPP shall include, at a minimum, the following:

- Erosion minimizing efforts such as straw wattles, water bars, covers, silt fences, and sensitive area access restrictions (for example, flagging) shall be installed before clearing and grading begins;
- Mulching, seeding, or other suitable stabilization measures shall be used to protect exposed areas during construction activities;
- Groundcover for the new substation shall be comprised of a pervious or high-roughness material (for example, gravel) to the maximum extent feasible;
- Downstream drainage discharge points shall be provided with erosion protection and designed such that flow hydraulics exiting the site mimic the natural condition as much as possible;
- Drainage from impervious surfaces such as roads, driveways, and buildings shall be directed into channel(s), drainage basin(s), or depression(s), as applicable to perpetuate the natural drainage patterns as much as possible;
- Mass grading and contouring shall be done in a way to direct surface runoff towards the above-referenced basin(s) and/or depression(s);
- Straw wattles (or comparably effective devices [as determined by the on-site Civil Engineer, in consultation with the Environmental Monitor]) shall be placed on the downslope sides of the proposed work which would direct flows into the above-referenced basin(s) and/or depression(s);
- All erosion control materials shall be biodegradable and natural fiber;
- During construction/ground disturbing activities and operation, all vehicles and equipment, including all hydraulic hoses, shall be maintained in good working order so that they are free of any and all leaks that could escape the vehicle or contact the ground, and to ensure that any leaks or spills during maintenance or storage can be easily and properly removed;
- Prior to and during construction, an environmental training program shall be established to communicate environmental concerns and appropriate work

practices, including spill prevention and response measures to all field personnel; and

- Storage of fuels and hazardous materials shall be prohibited within 200 feet of surface water features and private groundwater supply wells, and within 400 feet of community or municipal groundwater supply wells (if it is determined that such wells exist on or in close proximity to the project site).

Notice of Intent (NOI) packages shall be filed by the project owner with the State Water Resources Control Board (SWRCB) and the Colorado River Basin Regional Water Quality Control Board (RWQCB), and a Waste Discharge Identification Number (WDID) for the project shall be obtained prior to the issuance of construction permits. The SWPP shall be stored at the construction site for reference by construction personnel and for inspection review. All BMPs required by the SWPP shall be checked and maintained regularly and after all larger storm events. All remedial work shall be done immediately after discovery to ensure that erosion/sedimentation control devices remain in good working order. Proper implementation shall be verified by the Environmental Monitor.

MM WAT-5 **Construction Site Dewatering Management.** If groundwater is unexpectedly encountered during construction, operation, or decommissioning of the project, dewatering activities shall be performed in compliance with the California Stormwater Quality Association (CASQA) Handbook for Construction or other similar guidelines, as approved by the BLM. The project owner shall notify the BLM and the Colorado River Basin RWQCB at the onset of dewatering activities, and shall submit written descriptions of all executed dewatering activities, including steps taken to return encountered groundwater to the subsurface, upon the completion of dewatering activities. The Environmental Monitor shall regularly inspect grading activities for groundwater exposure. Should groundwater be encountered, compliance with dewatering efforts shall be verified by the Environmental Monitor.

MM WAT-6 **Drought Water Management and Water Conservation Education Programs.** Prior to the onset of construction of the project, a Drought Water Management Program shall be prepared by the project owner and submitted to the BLM for approval. The Drought Water Management Program shall provide guidelines on how all future water use will be managed during "severe" drought year(s). If a "severe" drought condition occurs during construction or operation of the project, restricted water usage measures shall be implemented per the Drought Water Management Program until it is shown satisfactorily to the BLM that the "severe" drought condition no longer exists. The Drought Water Management Program shall include at a minimum the following measures:

- The definition of a "severe" drought year (as defined by the National Oceanic and Atmospheric Administration's (NOAA) Palmer Drought Severity method or other similarly recognized methodology);
- Identification of general measures available to reduce water usage for future development (to be refined as needed for each use approved);
- Identification of specific measures to be applied for landscape watering; and

- Determination of appropriate early triggers to determine when "severe" drought conditions exist and process for initiating additional water conservation measures.

In addition to the Drought Water Management Program and prior to the onset of construction of the project, the project owner shall also develop a Water Conservation Education Program and submit this program to the BLM for review and approval. The Water Conservation Education Program shall be developed by an appropriate expert in water conservation, and shall include guidance for all future operators and employees of the project on how to adjust water usage during drought periods. The Water Conservation Education Program shall specify the means by which this guidance will be disseminated to any future operators and employees of the project.

For any year that a “severe drought” state has been recognized, the project owner shall submit a letter to the BLM by November 1 of that year identifying what measures were implemented to conserve water and to provide water conservation education, as well as the effectiveness of such measures. The Drought Water Management Program and Water Conservation Education Program shall be implemented throughout the construction, operation, and decommissioning phases of the project.

MM WAT-7 **Colorado River Water Supply Plan.** Prior to the onset of water-consuming construction activities, the project owner shall prepare a Colorado River Water Supply Plan (Plan) and submit this Plan to the BLM and the Colorado River Basin Regional Water Quality Control Board (RWQCB) for review and approval, and to the Metropolitan Water District of Southern California (MWD) for review and comment. The Plan shall identify measures that will be taken to replace water on an acre-foot to acre-foot basis, if the project results in consumption of any water from below the Colorado River Accounting Surface, towards the purpose of ensuring that no allocated water from the Colorado River is consumed without entitlement to that water.

The Plan shall describe that groundwater monitoring activities and quarterly data reports required in compliance with MM WAT-3 (Groundwater Drawdown Monitoring and Reporting Plan) will be closely reviewed for depth to groundwater information, and proximity of the depth of project-related groundwater pumping to the Colorado River Accounting Surface of 234 feet amsl. The Plan shall further describe that if project-related groundwater pumping draws water from below 234 feet amsl, the following shall occur:

1) All groundwater pumping shall immediately cease,
2) Based on groundwater monitoring data, the quantity of groundwater pumped from below 234 feet amsl shall be recorded, and
3) The project owner shall implement water conservation/offset activities to replace Colorado River water on an acre-foot by acre-foot basis.

In order to effectively implement item (3) above, the Plan shall include the following information:

- Identification of water conservation / offset activities to "replace" the quantity of water diverted from the Colorado River;
- Identification of any required permits or approvals and compliance of conservation / offset activities with CEQA and NEPA;
- An estimated schedule of completion for each identified activity;
- Performance measures that would be used to evaluate the amount of water replaced by each identified activity; and
- Monitoring and reporting protocol to ensure that water conservation / offset activities are effectively implemented and achieve the intended purpose of replacing Colorado River water diversions.

The project owner shall collaborate with the BLM, the Colorado River RWQCB, and/or the MWD, as appropriate, in order to identify acceptable water conservation / offset activities for the purposes of the Plan, with "acceptable" activities being those that are considered environmentally, physically, and economically feasible, while also effectively resulting in the replacement of Colorado River water. A number of water conservation / offset activities that have been considered and determined to not be viable and therefore may not be identified in the Plan include the following:

- Irrigation improvements in the Palo Verde Irrigation District (water unused by the PVID becomes available to MWD per the 2003 Colorado River Water Delivery Agreement executed by MWD, the Secretary of the Interior, Imperial Irrigation District, Coachella Valley Water District, and San Diego County Water Authority);
- Purchase of water allotments allocated by the Department of the Interior (all Colorado River water available to California in shortage, normal, or Intentionally Created Surplus conditions is already allocated and its use is limited to each entity's service area under executed water delivery contracts);
- Implementation of conservation programs in floodplain communities (all water unused by holders of higher priorities becomes available to MWD per the water delivery contracts which have been executed by the Department of the Interior); and
- Participation in the BLM's Tamarisk Removal Program (use of Colorado River water by phreatophytes such as tamarisk is not charged as a use of water for U.S. Supreme Court Decree accounting purposes by the U.S. Bureau of Reclamation).

If the project owner has filed an application to the U.S. Bureau of Reclamation (USBR) to obtain an allocation of water from the Colorado River and such allocation is granted, it may be used to satisfy some or all of the water conservation offsets on an acre-foot per acre-foot basis. However, the filing of an application for allocation of Colorado River water does not guarantee that such an allocation will be issued. In addition, all of California's apportionment to use of Colorado River water during shortage, normal, and Intentionally Created Surplus conditions

has already been allocated by the Department of the Interior. Therefore, unless the project owner currently holds entitlement to the use of Colorado River water, it shall not be assumed that an allocation will be granted.

If the project does not result in diversion of Colorado River water (via pumping from near (within +/- 0.84 feet at the 95-percent confidence level), equal to, or below 234 feet amsl) it will not be necessary to implement the water conservation/offset activities identified in the Colorado River Water Supply Plan. However, the Plan must be approved by the BLM prior to project-related groundwater pumping is initiated so that if at any time during the project it is determined that groundwater is being produced from below the Colorado River Accounting Surface of 234 feet amsl, the requirements described in this measure shall be immediately implemented, starting with the cessation of groundwater pumping.

The Colorado River Water Supply Plan is separate from the Groundwater Drawdown Monitoring and Reporting Plan required per MM WAT-3 and the Drought Water Management and Water Conservation Education Programs required per MM WAT-6. Therefore, this Plan must be developed, reviewed, approved of, and implemented as a separate, stand-alone document. Compliance with this measure shall be verified by the Environmental Monitor.

MM WAT-8 **Flood and Erosion Structure Damage Protection.** Aboveground project features shall be located outside of known watercourses, and shall be designed and maintained to withstand flooding and erosion hazards. Although some project features may need to be placed within 100-year floodplain boundaries, or Flood Hazard Areas identified by the Federal Emergency Management Agency, they shall be designed per applicable floodplain development guidelines, including measures such as specially designed footings to withstand flooding associated with a 100-year flood event. Channel design for flood control along the project perimeter shall be sized and designed to minimize scour and disruption to upstream and downstream hydrology, including measures to prevent headcutting, migration of channels, erosion, and downstream sedimentation, under conditions equivalent to a 100-year flood. Riprap shall be placed and maintained at the base of project infrastructure and foundations to slow the velocity of stormwater runoff. Compliance will be verified by the Environmental Monitor.

MM WAT-9 **Accidental Spill Control and Environmental Training.** Prior to the onset of construction of the project, the following specifications must be provided by the project owner to the BLM: define areas where hazardous materials would be stored, where trash would be placed, where rolling equipment would be parked, fueled and serviced, and where construction materials such as reinforcing bars and structural steel members would be stored. The project owner shall also prescribe hazardous materials handling procedures for reducing the potential for a spill during construction, and shall include an emergency response program to ensure quick and safe cleanup of accidental spills. These specifications may be included in the Surface Water Protection Plan (SWPP) described in MM WAT-4, or may be included as a separate plan. Compliance will be verified by the Environmental Monitor at the time of construction.

Residual Impacts and Unavoidable Adverse Effects

No unavoidable adverse effects to water resources would result from implementation of Alternative 4.

4.20.7 Alternative 5 – Solar Project Excluding WHMA

Under Alternative 5 the solar facility site would be constructed the same as Alternative 4, except that project components would be excluded from the WHMA.

Construction

Groundwater Supply and Recharge

The quantity of water required during construction of Alternative 5 has not been identified. However, the quantity of water required for dust suppression during construction of Alternative 4 can be extrapolated per acre of site development, to determine that dust suppression requires approximately 0.33 to 0.41 afy of water per acre of site development. Alternative 5 would develop 1,161 acres, requiring approximately 384.4 to 480.5 afy of water for dust suppression, which is approximately four percent less than the water supply requirement associated with Alternative 4; as such, Alternative 5 would require 15.6 to 19.5 afy less than Alternative 4.

Tables 3.20-2 and 3.20-3 identify several different water budget scenarios that may be present in the CVGB, ranging from a positive budget of 2,623 acre-feet to a negative (overdraft) budget of 7,912 acre-feet. As such, the CVGB may or may not be currently in a state of overdraft; due to this uncertainty, mitigation measures are required. The construction water requirement associated with Alternative 5 is less than that for Alternative 4; however, this difference is minimal when compared to overall construction water requirements, and the nature and magnitude of potential effects to groundwater supply and recharge under Alternative 5 are essentially the same as under Alternative 4. The same mitigation measures identified above for Alternative 4 are required for Alternative 5 in order to minimize or avoid potential effects to groundwater supply and recharge.

Surface Water and Drainage Patterns

Alternative 5 would encompass approximately 1,161 acres, 47 fewer than Alternative 4, and would clear 107 acres of vegetation, the same as Alternative 4. The area permanently covered by at-grade items under Alternative 5 would be 10 acres, which is also the same as Alternative 4. Therefore, although Alternative 5 would avoid development on 47 acres of the site, the amount of new impervious surfaces and compacted soils introduced under Alternative 5 would be the same as described above for Alternative 4. Potential impacts to surface water and drainage patterns would be the same as previously described. The same mitigation measures identified above for Alternative 4 are required for Alternative 5 in order to minimize or avoid potential effects on surface water and drainage patterns.

Stormwater Drainage Systems

No stormwater drainage system exists at the Alternative 5 site. As with Alternative 4, construction of Alternative 5 would include implementation of a SWPP, including BMPs specified in

MM WAT-4. Potential effects associated with the contribution of polluted stormwater runoff would be the same under Alternative 5 as under Alternative 4.

Flood Hazard Areas

The removal of 47 acres from development under Alternative 5 would avoid the need for construction activities to occur across 47 acres that may experience flood flow. With consideration to the overall site, this difference is minimal. Potential effects of Alternative 5 associated with flood flows would be essentially the same as those of Alternative 4, and the mitigation measures identified above are required.

Water Quality

Construction of Alternative 5 would avoid the potential for degradation of surface water quality and/or groundwater quality to occur on the 47 acres that would be avoided. However, the same types of construction activities would occur under this alternative, and with consideration to the overall project, the nature and magnitude of potential effects on water quality that would occur under Alternative 5 would be the same as under Alternative 4.

Operation and Maintenance

Operational and maintenance activities required under Alternative 5 would be the same as required for Alternative 4, including as relevant to groundwater supply and recharge, surface water and drainage patterns, stormwater drainage systems, flood hazard areas, and water quality.

Decommissioning

Decommissioning of Alternative 5 would not require the removal of infrastructure on the WHMA portion of the site eliminated under this alternative, and decommissioning would not result in soil disturbance on this portion of the site, thereby avoiding potential effects associated with water quality degradation from erosion and sedimentation on the WHMA portion of the site. With consideration to the overall project, this difference would not alter the nature and magnitude of potential effects on water resources, which would be the same as described above for Alternative 4.

Mitigation Measures

All mitigation measures listed in Section 4.20.6 are required to minimize or avoid potential effects on water resources resulting from Alternative 5.

Residual Impacts and Unavoidable Adverse Effects

No unavoidable adverse effects on water resources would result from implementation of Alternative 5.

4.20.8 Alternative 6 – Reduced Footprint Solar Project

Similar to Alternative 5, Alternative 6 would also develop a smaller area of the solar facility site than proposed under Alternative 4. Construction activities would occur on the same schedule as for Alternative 4 and would use the same project boundaries as Alternative 4, except that it would exclude the 164-acre southern parcel of the project.

Construction

Groundwater Supply and Recharge

The quantity of water required during construction of Alternative 6 has not been identified. However, the quantity of water required for dust suppression during construction of Alternative 4 can be extrapolated per acre of site development, as with Alternative 5. Alternative 6 would develop 1,044 acres, requiring approximately 348.3 to 435.4 afy of water for dust suppression, which is 51.6 to 64.6 afy less, or approximately 13 percent less, than Alternative 4. The estimated safe yield of the CVGB is to be 2,623 afy; as such, sufficient groundwater supply is available to meet the construction water requirements of Alternative 6. Although the construction water requirement associated with Alternative 6 is approximately 13 percent less than that for Alternative 4, this difference is not substantial when compared with overall construction water requirements, and the nature and magnitude of potential effects on groundwater supply and recharge under Alternative 6 are essentially the same as under Alternative 4. The same mitigation measures identified above for Alternative 4 are required for Alternative 6 in order to minimize or avoid potential effects on groundwater supply and recharge.

Surface Water and Drainage Patterns

Alternative 6 would encompass approximately 1,044 acres, 164 fewer than Alternative 4. Construction of Alternative 6 would clear slightly fewer acres of vegetation than Alternative 4, and result in permanent coverage by at-grade items over slightly fewer acres than Alternative 4. These differences in ground disturbance and infrastructure would not substantially alter potential effects on surface water and drainage patterns. Potential effects on surface water and drainage patterns would be the same as previously described. The same mitigation measures identified above for Alternative 4 are required for Alternative 6 in order to minimize or avoid potential effects on surface water and drainage patterns.

Stormwater Drainage Systems

No stormwater drainage system exists at the Alternative 6 site. As with Alternative 4, construction of Alternative 6 would include implementation of a SWPP, including BMPs specified in MM WAT-4. Potential effects associated with the contribution of polluted stormwater runoff would be the same under Alternative 6 as under Alternative 4.

Flood Hazard Areas

The removal of 164 acres from development under Alternative 6 would avoid the need for construction activities to occur across 164 acres that may experience flood flow. With consideration to the overall site, this difference is minimal. Potential effects of Alternative 6 associated with flood flows would be essentially the same as those of Alternative 4, and the mitigation measures identified above are required.

Water Quality

Construction of Alternative 6 would avoid the potential for degradation of surface water quality and/or groundwater quality to occur on the 164 acres that would be avoided. However, the same types of construction activities would occur under this alternative and with consideration to the

overall project, the nature and magnitude of potential effects on water quality that would occur under Alternative 6 would be the same as under Alternative 4.

Operation and Maintenance

Operational and maintenance activities required under Alternative 6 would be the same as required for Alternative 4, including as relevant to groundwater supply and recharge, surface water and drainage patterns, stormwater drainage systems, flood hazard areas, and water quality.

Decommissioning

Decommissioning of Alternative 6 would not require the removal of infrastructure on the southern portion of the site eliminated under this alternative, and decommissioning would not result in soil disturbance on this portion of the site, thereby avoiding potential effects associated with water quality degradation from erosion and sedimentation. With consideration to the overall project, this difference would not alter the nature and magnitude of potential effects on water resources, which would be the same as described above for Alternative 4.

Mitigation Measures

All mitigation measures listed in Section 4.20.6 are required to minimize or avoid potential effects on water resources resulting from Alternative 6.

Residual Impacts and Unavoidable Adverse Effects

No unavoidable adverse effects on water resources would result from implementation of Alternative 6.

4.20.9 Alternative 7 – High-Profile Reduced Footprint Solar Project

Alternative 7 would be constructed within the same project boundaries as Alternative 6. Alternative 7 would encompass an estimated 1,044 acres and would be an estimated 150 MW nominal capacity project. Project details are the same as for Alternative 4, with the only exception being the overall height of the panels for Alternative 7. Alternative 7 would use high-profile single-axis tracking panels that would have a total height of 15 feet. Construction activities would occur on the same schedule as for Alternative 4 and would use the same project boundaries as Alternative 4, except that it would exclude the 155-acre southern parcel of the project.

Construction

Groundwater Supply and Recharge

The quantity of water required during construction of Alternative 7 has not been identified. However, the quantity of water required for dust suppression during construction of Alternative 4 can be extrapolated per acre of site development. Alternative 7 would develop 1,044 acres, requiring approximately 348.3 to 435.4 afy of water for dust suppression, which is 51.6 to 64.6 afy less, or approximately 13 percent less, than Alternative 4. The estimated safe yield of the CVGB is to be 2,623 afy; as such, sufficient groundwater supply is available to meet the construction water requirements of Alternative 7. Although the construction water requirement associated with Alternative 7 is approximately 13 percent less than that for Alternative 4, this difference is not substantial when compared with overall construction water requirements, and

the nature and magnitude of potential effects on groundwater supply and recharge under Alternative 7 are essentially the same as under Alternative 4. The same mitigation measures identified above for Alternative 4 are required for Alternative 7 in order to minimize or avoid potential effects on groundwater supply and recharge.

Surface Water and Drainage Patterns

Alternative 7 would encompass approximately 1,044 acres, 164 fewer than Alternative 4. Construction of Alternative 7 would clear slightly fewer acres of vegetation than Alternative 4, and result in permanent coverage by at-grade items over slightly fewer acres than Alternative 4. These differences in ground disturbance and infrastructure would not substantially alter potential effects on surface water and drainage patterns. Potential effects on surface water and drainage patterns would be the same as previously described. The same mitigation measures identified above for Alternative 4 are required for Alternative 7 in order to minimize or avoid potential effects on surface water and drainage patterns.

Stormwater Drainage Systems

No stormwater drainage system exists at the Alternative 7 site. As with Alternative 4, construction of Alternative 7 would include implementation of a SWPP, including BMPs specified in MM WAT-4. Potential effects associated with the contribution of polluted stormwater runoff would be the same under Alternative 7 as under Alternative 4.

Flood Hazard Areas

The removal of 164 acres from development under Alternative 7 would avoid the need for construction activities to occur across 164 acres that may experience flood flow. With consideration to the overall site, this difference is minimal. Potential effects of Alternative 7 associated with flood flows would be essentially the same as those of Alternative 4, and the mitigation measures identified above are required.

Water Quality

Construction of Alternative 7 would avoid the potential for degradation of surface water quality and/or groundwater quality to occur on the 164 acres that would be avoided. However, the same types of construction activities would occur under this alternative, and with consideration to the overall project, the nature and magnitude of potential effects on water quality that would occur under Alternative 7 would be the same as under Alternative 4.

Operation and Maintenance

Operational and maintenance activities required under Alternative 7 would be the same as required for Alternative 4, including as relevant to groundwater supply and recharge, surface water and drainage patterns, stormwater drainage systems, flood hazard areas, and water quality.

Decommissioning

Decommissioning of Alternative 7 would not require the removal of infrastructure on the southern portion of the site eliminated under this alternative, and decommissioning would not result in soil disturbance on this portion of the site, thereby avoiding potential effects associated with water quality degradation from erosion and sedimentation. With consideration to the overall

project, this difference would not alter the nature and magnitude of potential effects on water resources, which would be the same as described above for Alternative 4.

Mitigation Measures

All mitigation measures listed in Section 4.20.6 are required to minimize or avoid potential effects on water resources resulting from Alternative 7.

Residual Impacts and Unavoidable Adverse Effects

No unavoidable adverse effects on water resources would result from implementation of Alternative 7.

4.20.10 Alternative A – No Gen-Tie

Under Alternative A, no gen-tie line would be constructed or operated as part of the DHSP. Therefore, no water resources effects related to construction, operations and maintenance, or decommissioning of the gen-tie line would occur.

4.20.11 Alternative B – Proposed Gen-Tie (Shared Towers)

Under Alternative B, the proposed gen-tie would utilize transmission infrastructure developed for First Solar's Desert Sunlight Solar Farm project by sharing the approved transmission towers. The Desert Sunlight approved gen-tie has not yet been constructed, and Alternative B would require construction of this transmission line.

Construction

Direct Effects

Construction of the gen-tie would require a water supply of 6.25 afy for dust abatement. This water requirement was not included in the discussion of water supply impacts under Alternative 4, but it is addressed as a cumulative project in the WSA, because it would either be constructed under the proposed DHSP or the Desert Sunlight project. As projected in the WSA and discussed under Alternative 4, it is anticipated that the CVGB could be affected by overdraft conditions during implementation of the project. As such, additional usage of the CVGB could contribute to overdraft. However, the gen-tie water requirement of 6.25 afy is a one-time water use that would occur during the short-term construction period; this quantity of water is minimal and would not substantially affect groundwater supply or supply reliability.

Construction of Alternative B would require ground disturbance at each tower location, pulling station location, and dead-end pole location. This ground disturbance would introduce the potential for soil erosion and sedimentation which could result in water quality degradation to occur. The construction of towers would also introduce the potential for an accidental spill or leak of hazardous materials to occur, associated with the use of heavy vehicles and equipment required for construction of this infrastructure.

Indirect Effects

No indirect effects to water resources would occur as a result of construction of Alternative B.

Operation and Maintenance

Direct Effects

Operation and maintenance of the gen-tie line proposed under Alternative B would not require a water source, and would not include earth-disturbing activities or the handling/use of hazardous materials that would have potential to result in water resources effects. No direct effects would occur.

Indirect Effects

No indirect effects to water resources would occur as a result of operation and maintenance of Alternative B.

Decommissioning

Direct Effects

Decommissioning of the gen-tie line under Alternative B would be limited to the removal of the transmission cables from the existing towers. A water supply is not anticipated to be required for these activities. Earth-disturbing activities and the use of vehicles and equipment along the gen-tie line would have potential to result in water resources effects associated with the use of vehicles and equipment that could leak hazardous materials.

Indirect Effects

No indirect effects to water resources would occur as a result of operation and maintenance of Alternative B.

Mitigation Measures

MM WAT-1 (Demonstrate compliance with water quality permits) would ensure that Alternative B occurs in compliance with all applicable laws and regulations relevant to water quality, and MM WAT-9 (Accidental Spill Control and Environmental Training) would minimize the potential for an accidental spill or release of hazardous materials to occur, such as during the use of construction equipment and vehicles.

Residual Impacts and Unavoidable Adverse Effects

The construction, operation and maintenance, and decommissioning of Alternative B would not result in any unavoidable adverse effects.

4.20.12 Alternative C – Separate Transmission Towers within Same ROW

Alternative C would parallel the approved Desert Sunlight gen-tie line, and would be located on separate towers within the same, or a slightly larger, ROW. The same number of towers in a nearly identical alignment to that of First Solar's towers would be constructed. As described above for Alternative B, the Desert Sunlight project is not included in baseline conditions and therefore, Alternative B includes construction of the required gen-tie infrastructure. The construction, operation, and maintenance activities associated with Alternative C would be identical to those described for Alternative B, and the potential water resources impacts of Alternative C would therefore be identical those described for Alternative B.

Construction

Direct Effects

Potential effects of construction of Alternative C to water resources would be the same as discussed above for Alternative B.

Indirect Effects

No indirect effects to water resources would occur as a result of construction of Alternative C.

Operation and Maintenance

Direct Effects

Potential effects of operation and maintenance of Alternative C to water resources would be the same as discussed above for Alternative B.

Indirect Effects

No indirect effects to water resources would occur as a result of operation and maintenance of Alternative C.

Decommissioning

Direct Effects

Potential effects of decommissioning of Alternative C to water resources would be the same as discussed above for Alternative B.

Indirect Effects

No indirect effects to water resources would occur as a result of operation and maintenance of Alternative C.

Mitigation Measures

MM WAT-1 (Demonstrate compliance with water quality permits) would ensure that Alternative C occurs in compliance with all applicable laws and regulations relevant to water quality, and MM WAT-9 (Accidental Spill Control and Environmental Training) would minimize the potential for an accidental spill or release of hazardous materials to occur, such as during the use of construction equipment and vehicles.

Residual Impacts and Unavoidable Adverse Effects

The construction, operation and maintenance, and decommissioning of Alternative C would not result in any unavoidable adverse effects.

4.20.13 Alternative D – Cross-Valley Alignment

Construction

Construction of Alternative D would be identical to that described for Alternative C, except it would require slightly less temporary and permanent ground disturbance.

Direct Effects

Due to slightly less ground disturbance required under Alternative D, there would also be slightly less potential for water quality effects resulting from soil erosion and sedimentation or the accidental spill or release of hazardous materials to occur. All other potential effects of Alternative D to water resources would be the same as described for Alternative C.

Indirect Effects

No indirect effects to water resources would occur as a result of construction of Alternative D.

Operation and Maintenance

Operation and maintenance of Alternative D would be identical to that described for Alternative C, except it would require slightly less temporary and permanent ground disturbance.

Direct Effects

As with construction effects, the smaller amount of ground disturbance that would occur under Alternative D would also result in slightly less potential for water quality effects resulting from soil erosion and sedimentation or the accidental spill or release of hazardous materials to occur. All other potential effects of Alternative D to water resources would be the same as described for Alternative C.

Indirect Effects

No indirect effects to water resources would occur as a result of operation and maintenance of Alternative D.

Decommissioning

Decommissioning of Alternative D would be identical to that described for Alternative C, except it would require slightly less temporary and permanent ground disturbance.

Direct Effects

As with construction effects, the smaller amount of ground disturbance that would occur under Alternative D would also result in slightly less potential for water quality effects resulting from soil erosion and sedimentation or the accidental spill or release of hazardous materials to occur. All other potential effects of Alternative D to water resources would be the same as described for Alternative C.

Indirect Effects

No indirect effects to water resources would occur as a result of operation and maintenance of Alternative D.

Mitigation Measures

MM WAT-1 (Demonstrate compliance with water quality permits) would ensure that Alternative D occurs in compliance with all applicable laws and regulations relevant to water quality, and MM WAT-9 (Accidental Spill Control and Environmental Training) would minimize the poten-

tial for an accidental spill or release of hazardous materials to occur, such as during the use of construction equipment and vehicles.

Residual Impacts and Unavoidable Adverse Effects

The construction, operation and maintenance, and decommissioning of Alternative D would not result in any unavoidable adverse effects.

4.20.14 Alternative E – New Cross-Valley Alignment

Construction

Direct Effects

Potential effects of construction of Alternative E to water resources would be the same as discussed above for Alternative D.

Indirect Effects

No indirect effects to water resources would occur as a result of operation and maintenance of Alternative E.

Operation and Maintenance

Direct Effects

Potential effects of operation and maintenance of Alternative E to water resources would be the same as discussed above for Alternative D.

Indirect Effects

No indirect effects to water resources would occur as a result of operation and maintenance of Alternative E.

Decommissioning

Direct Effects

Potential effects of decommissioning of Alternative E to water resources would be the same as discussed above for Alternative D.

Indirect Effects

No indirect effects to water resources would occur as a result of decommissioning of Alternative E.

Mitigation Measures

MM WAT-1 (Demonstrate compliance with water quality permits) would ensure that Alternative D occurs in compliance with all applicable laws and regulations relevant to water quality, and MM WAT-9 (Accidental Spill Control and Environmental Training) would minimize the potential for an accidental spill or release of hazardous materials to occur, such as during the use of construction equipment and vehicles.

Residual Impacts and Unavoidable Adverse Effects

The construction, operation and maintenance, and decommissioning of Alternative D would not result in any unavoidable adverse effects.

4.20.15 Cumulative Effects

Cumulative effects on water resources resulting from the project or an alternative would occur if similar effects of other projects located within the geographic extent of this analysis, as shown in Table 4.20-3, were to occur during the same time period as those effects of the DHSP, including during the construction, operation and maintenance, and decommissioning phases.

Table 4.20-3. Cumulative Projects within the Geographic Scope of Cumulative Analysis

Resource Area / BLM Program Area	Geographic Area of Consideration	Elements to Consider	BLM Authorized and Other Known County Projects/Actions/Activities
Water Resources	Chuckwalla Valley Groundwater Basin	Water supply, surface drainage patterns; flooding and earth-disturbing activities that result in erosion and sedimentation	• Palen Solar Power Project • First Solar Desert Sunlight • Red Bluff Substation • Devers-Palo Verde No. 2 Transmission • Colorado River Substation Expansion • Blythe Energy Transmission Line • Desert Southwest Transmission Line • Eagle Crest Pumped Storage Startup • Genesis Solar Energy Project • Blythe Energy Transmission Line • Desert SW Transmission • Silverado Power I, II, III • Sol Orchard Solar PV Project • Desert Center 50 Solar PV Project

Geographic Scope

The geographic extent of this cumulative effects analysis for water resources effects under the proposed project and alternatives is the CVGB. This is an appropriate scope of analysis because the proposed project and alternatives are located within the surface recharge area of the CVGB, and water supply requirements associated with the construction, operation and maintenance, and decommissioning of the proposed project or an alternative would be met with water pumped from the CVGB. As mentioned above, a cumulative effect to water resources could occur if other projects within the geographic scope of this analysis occur during the same time period as effects of the proposed project or an alternative.

The temporal scope of this cumulative analysis is considered the period within which a water resources effect of the proposed project or an alternative is actively present. For instance, a cumulative effect could occur if other projects within the geographic scope contribute to overdraft conditions in the affected groundwater basin while the project-related groundwater pumping also contributes to overdraft conditions. The temporal scope of this analysis is discussed further in the following sections.

Cumulative Effects Analysis

Existing cumulative conditions relevant to water resources are comprised of projects which previously and/or currently: utilize local groundwater resources as a project water supply; substan-

tially alter surface drainage patterns; result in flooding associated with new impervious areas and/or the placement of permanent infrastructure; include earth-disturbing activities that result in erosion and sedimentation; or result in hazards and/or inundation by mudflow. Table 4.1-1 (Existing Projects Along the I-10 Corridor (Eastern Riverside County)) identifies cumulative projects within the geographic scope of analysis for the DHSP; other projects are considered in this cumulative analysis as relevant to water resources.

Groundwater Supply and Recharge

Cumulative effects to groundwater supply and recharge during construction, operation and maintenance, or decommissioning of the proposed project or an action alternative would occur if other projects drawing groundwater from the CVGB would contribute to long-term overdraft conditions while the proposed project or an alternative (Alternatives 5 through 7 and C, D, and E) is pumping groundwater for construction requirements, and/or if other projects within the surface recharge area of the CVGB introduce substantial new areas of impervious surfaces such that groundwater recharge rates and/or patterns are substantially altered. The effects analysis discussions provided in Sections 4.20-3 through 4.20-12 indicate that potential effects of the proposed project or an action alternative to groundwater supply and recharge resulting from new impervious areas, including compacted soils, would be site-specific and not substantial; therefore, cumulative effects to groundwater supply and recharge are not anticipated to result from new impervious areas. With regards to the pumping of groundwater from the CVGB, the proposed project or an action alternative would draw water from the CVGB over the lifetime of the project, as would other projects within the geographic extent of analysis.

Table 4.20-4 (Estimated Water Requirements of Cumulative Projects), below, lists the water demands associated with construction and operation of other projects within the cumulative scope that are anticipated to pump groundwater from the CVGB within the same timeframe as the proposed project or an alternative. Three of the cumulative projects listed in Table 4.20-3 are not listed in Table 4.20-4, including the following: Silverado Power I, II, III, Sol Orchard Solar PV Project, and Desert Center 50 Solar PV Project. These projects were added to the cumulative scenario after publication of the Draft EIS for the proposed project, and at the time of publication of this Final EIS, sufficient information about these three projects is not available to calculate their contribution to the cumulative environment for groundwater supply. Due to the many variables which contribute to how much water would be required for a project, including but not limited to the size of the development and type of technology installed, it is not possible to make reasonable assumptions about how much water each of these projects would consume. Therefore, the Silverado Power I, II, III, Sol Orchard Solar PV Project, and Desert Center 50 Solar PV Project are omitted from Table 4.20-4. One other change to the cumulative scenario that was implemented after publication of the Draft EIS is that the proposed Chuckwalla Valley Solar Project has been removed, as the application for this project was rejected. Table 4.20-4 indicates that between 2010 and 2043, water demand associated with cumulative projects ranges from a low of 620 afy in 2010 to a high of 10,010.9 afy in years 2014 through 2017.

In order to characterize potential effects of cumulative water demands on the CVGB, estimates of cumulative budget for the CVGB are presented in Tables 4.20-5a through 4.20-5c. A series of tables has been provided for this purpose in order to address differing professional opinions regarding the balance of the CVGB. As discussed in Section 3.20 and in the WSA included as Appendix E, the primary areas of differing opinion are the quantity of recharge to the CVGB

from precipitation, and from underflow of water in the adjacent Pinto and Orocopia Valley Groundwater Basins. Tables 4.20-5a through 4.20-5c address a range of potential values for recharge from precipitation and underflow, as follows:

- Table 4.20-5a assumes 9,448 afy recharge from precipitation and 3,500 afy recharge from underflow;
- Table 4.20-5b assumes 2,060 afy recharge from precipitation and 953 afy recharge from underflow; and
- Table 4.20-5c assumes 6,125 afy recharge from precipitation and 1,906 afy recharge from underflow.

Using the assumptions listed above and the cumulative water requirements listed in Table 4.20-4, the estimated cumulative groundwater budgets presented in Tables 4.20-5a through 4.20-5c indicate that the CVGB is expected to be affected by overdraft conditions during implementation of the DHSP. These deficit years are likely due to the elevated construction water requirements associated with coinciding construction periods for projects such as the Eagle Crest Pumped Storage Project, the Palen Solar Power Project, and the Desert Sunlight Solar Farm project, noted in Table 4.20-3. Following completion of the construction periods for these projects, their water requirements would decrease and overdraft conditions in the CVGB would recover. As portrayed in Table 4.20-4, projected overdraft conditions are projected to recover substantially over the life of the DHSP.

Construction and operation of the DHSP would include implementation of BMPs and mitigation measures identified in Section 4.20.6. Mitigation Measure WAT-2 (Alternative Water Source and Groundwater Offsets) and Mitigation Measure WAT-3 (Groundwater Drawdown Monitoring and Reporting Plan) require actions to ensure that construction of the proposed project or an alternative would not contribute to or result in long-term overdraft conditions; specifically, these mitigation measures ensure that the project would use a water source other than the CVGB during any year that the CVGB is projected to be affected by overdraft conditions, and groundwater monitoring and reporting actions would occur to clarify uncertainties regarding the groundwater basin characteristics, such as the quantity of recharge from precipitation and underflow, and to make management decisions accordingly.

Potential overdraft effects would be temporary and would cease in response to the implementation of requirements specified in Mitigation Measures WAT-2 and WAT-3. As determined in the effects analyses presented in Sections 4.20.3 through 4.20.14, the proposed project or an alternative would not result in long-term overdraft or drawdown conditions. In addition, if other project(s) within the geographic and temporal scope of analysis pump CVGB groundwater at the same time as the proposed project or an alternative, and such pumping results in overdraft conditions (temporary or long-term) as noted in Table 4.20-4, such effects would be detected by the groundwater monitoring and reporting activities required per Mitigation Measure WAT-3 and groundwater pumping associated with the proposed project or an alternative would be subsequently ceased until the groundwater resource recovers, which is anticipated to occur in response to precipitation events, per the nature of fractured rock storage and overdraft/drawdown conditions. Therefore, the DHSP would not contribute to cumulative effects associated with groundwater supply and recharge.

Water supply reliability is further addressed in the WSA prepared for the DHSP, included as Appendix E to this EIS. The WSA includes consideration of the cumulative groundwater budget discussed above, under varying climatic conditions in order to project how the availability of water supply could be affected by drought years. Conclusions presented in Section 5 of the WSA describe that overdraft conditions are expected to be present in the CVGB during implementation of the DHSP and other reasonably foreseeable projects in the area; however, such conditions would occur regardless of the proposed DHSP and would recover over time. Additionally, project-specific mitigation measures such as MM WAT-2 would ensure that the proposed DHSP would not contribute to overdraft conditions in the CVGB by requiring actions such as the use of an alternative water source during any year for which the CVGB is projected to be in overdraft. The project would have some effect on groundwater supply due to the consumptive use of CVGB groundwater during years with a positive water budget (non-overdraft years), but such effects would be less than significant and would not contribute to cumulative groundwater supply impacts.

Table 4.20-4. Estimated Water Requirements of Cumulative Projects (afy)

Cumulative Projects[1]	Const.	O&M	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019–2043
Western Chuckwalla Valley Groundwater Basin												
Palen Solar Power Project	436	300	0	426	426	436	300	300	300	300	300	300
First Solar Desert Sunlight[2]	600–650	0.3	0	0	[650][2]	[650][2]	0.3	0.3	0.3	0.3	0.3	0.3
Red Bluff Substation	300	0	0	0	150	150	0	0	0	0	0	0
Gen-Tie Line	6.25	0	0	0	0	6.25	0	0	0	0	0	0
Devers-Palo Verde No. 2 Transmission	2		0	2	2	2	0	0	0	0	0	0
Colorado River Substation Expansion[3]	215	0	0	0	215	66	0	0	0	0	0	0
Blythe Energy Transmission Line	2		2	2	0	0	0	0	0	0	0	0
Desert Southwest Transmission Line	0.3		0	0	0	0.3	0.3	0	0	0	0	0
Eagle Crest Pumped Storage Startup	2,380–8,066	1,628	0	0	0	0	8,066	8,066	8,066	8,066	2,380	1,628
Total WESTERN SUB-BASIN DEMAND			*2*	*430*	*793*[2]	*660.55*[2]	*8,366.6*	*8,366.3*	*8,366.3*	*8,366.3*	*2,680.3*	*1,928.3*
Eastern Chuckwalla Valley Groundwater Basin												
Genesis Solar Energy Project[4]	616–1,368	1,644	616	1,368	616	616	1,644	1,644	1,644	1,644	1,644	1,644
Devers-Palo Verde No. 2 Transmission	2		0	2	2	2	0	0	0	0	0	0

Table 4.20-4. Estimated Water Requirements of Cumulative Projects (afy)

Cumulative Projects[1]	Const. O&M	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019–2043
Blythe Energy Transmission Line	2	2	2	0	0	0	0	0	0	0	0
Desert SW Transmission	0.3	0	0	0	0.3	0.3	0	0	0	0	0
Total EASTERN SUB-BASIN DEMAND		*618*	*1,372*	*618*	*618.3*	*1,644.3*	*1,644*	*1,644*	*1,644*	*1,644*	*1,644*
Combined Western and Eastern Chuckwalla Valley Groundwater Basin											
		620	1,802	1,411[2]	1,278.85[2]	10,010.9	10,010.3	10,010.3	10,010.3	4,324.3	3,572.3

1 - Status of cumulative projects listed in this table:

- Gen-Tie Line construction would being in the 3rd or 4th quarter of 2012 and would last for an estimated 12 months; due to the late-2012 construction start, it is anticipated that most water use associated with the gen-tie line would occur in 2013.
- Palen Solar Energy Project was approved by the CEC in December of 2010, Final EIS published in May of 2011, proposed to be online in 2012
- First Solar Desert Sunlight was approved in August of 2011 and was under construction at the time of publication of the Notice of Intent for DHSP (September 15, 2011).
- Devers-Palo Verde No. 2 Transmission Line Project: BLM issued Record of Decision in July of 2011
- Colorado River Substation Expansion: Construction anticipated to initiate in December of 2011.
- Blythe Energy Transmission Line: Existing.
- Desert Southwest Transmission Line: Approved by BLM in 2006.
- Eagle Crest Pumped Storage: FERC Draft EIS published in December of 2010.
- Genesis Solar Energy Project: Currently under construction.

2 - The First Solar Desert Sunlight Project would require 650 afy of water for construction in 2012 and 2013; as discussed in Section 3.20, these construction water requirements were accounted for in the safe yield estimates provided in Tables 3.20 2 and 3.20-3, because construction of the Desert Sunlight Project was ongoing at the time of publication of the Notice of Intent for the proposed project and construction water use is therefore considered part of baseline conditions. This table shows the Desert Sunlight construction water usage, but does not include this quantity in the total water balance values, in order to avoid calculating for this amount twice — once in the safe yield estimate and once in the cumulative balance calculations. Operational water requirements of 0.3 afy for the Desert Sunlight Project are included in the totals shown above in Table 3.20-4 and below in Tables 3.20-5a through 3.20-5c because this amount was not previously accounted for in the safe yield estimates.

3 - The Colorado River Substation Expansion project would pump 300,000 gallons per day (gpd) over the first four to six months, or a total of 110.5 to 165.7 acre-feet, and 120,000 gpd over the following 18 months, or 198.9 acre-feet; in total, this project is anticipated to pump 309.3 to 364.6 acre-feet over 22 to 24 months, or an average annual rate of 215 afy during the first full year (2012) and 66 afy during the second year. No operational water use has been identified.

4 - The Genesis analysis noted that the Desert Sunlight Solar Farm project would pump 27 afy of groundwater during the construction period and 3.8 afy during the operational period; however, the FEIS for Desert Sunlight indicates that this project would pump an average of 1,556 afy during construction and less than 0.3 afy during operation. For the purposes of this analysis, the quantities indicated in the Desert Sunlight FEIS are used.

Source: CEC 2010; CEC 2010; CPUC 2011; WorleyParsons 2009

Table 4.20-5a (9,448 afy normal year). Estimated Cumulative Budget for the Chuckwalla Valley Groundwater Basin (afy)[1]

	Inflow (afy)					Outflow (afy)					Balance (afy)		
Year	Precip.	Subsurface Inflow	Irrigation Return	Wastewater Return	*Total Inflow*	Current Pumping	Flow to PVMGB	Palen Lake Evap	Future Pumping	*Total Outflow*	Balance	DHSP Demand	*With-Project*
2012	9,448	3,500	800	636	*14,384*	10,361	399	350	1,411	*12,521*	1,863	0	1,863
2013	9,448	3,500	800	636	*14,384*	10,361	388	350	1,278.85	*12,378*	2,006	500.51	*1,506*
2014	9,448	3,500	800	636	*14,384*	10,361	373	350	10,010.9	*21,095*	–6,711	500.51	*–7,211*
2015	9,448	3,500	800	636	*14,384*	10,361	360	350	10,010.3	*21,081*	–6,697	39.02	*–6,736*
2016	9,448	3,500	800	636	*14,384*	10,361	347	350	10,010.3	*21,068*	–6,684	39.02	*–6,723*
2017	9,448	3,500	800	636	*14,384*	10,361	334.5	350	10,010.3	*21,056*	–6,672	39.02	*–6,711*
2018	9,448	3,500	800	636	*14,384*	10,361	322	350	4,324.3	*15,357*	–973	39.02	*–1,012*
2019	9,448	3,500	800	636	*14,384*	10,361	308	350	3,572.3	*14,591*	–207	39.02	*–246*
2020	9,448	3,500	800	636	*14,384*	10,361	295	350	3,572.3	*14,578*	–194	39.02	*–233*
2021	9,448	3,500	800	636	*14,384*	10,361	281.5	350	3,572.3	*14,565*	–181	39.02	*–220*
2022	9,448	3,500	800	636	*14,384*	10,361	269	350	3,572.3	*14,552*	–168	39.02	*–207*
2023	9,448	3,500	800	636	*14,384*	10,361	256.5	350	3,572.3	*14,540*	–156	39.02	*–195*
2024	9,448	3,500	800	636	*14,384*	10,361	245	350	3,572.3	*14,528*	–144	39.02	*–183*
2025	9,448	3,500	800	636	*14,384*	10,361	233	350	3,572.3	*14,516*	–132	39.02	*–171*
2026	9,448	3,500	800	636	*14,384*	10,361	221	350	3,572.3	*14,504*	–120	39.02	*–159*
2027	9,448	3,500	800	636	*14,384*	10,361	210	350	3,572.3	*14,493*	–109	39.02	*–148*
2028	9,448	3,500	800	636	*14,384*	10,361	199.5	350	3,572.3	*14,483*	–99	39.02	*–138*
2029	9,448	3,500	800	636	*14,384*	10,361	190	350	3,572.3	*14,473*	–89	39.02	*–128*
2030	9,448	3,500	800	636	*14,384*	10,361	180	350	3,572.3	*14,463*	–79	39.02	*–118*
2031	9,448	3,500	800	636	*14,384*	10,361	170	350	3,572.3	*14,453*	–69	39.02	*–108*
2032	9,448	3,500	800	636	*14,384*	10,361	160	350	3,572.3	*14,443*	–59	39.02	*–98*
2033	9,448	3,500	800	636	*14,384*	10,361	150	350	3,572.3	*14,433*	–49	39.02	*–88*
2034	9,448	3,500	800	636	*14,384*	10,361	140	350	3,572.3	*14,423*	–39	39.02	*–78*
2035	9,448	3,500	800	636	*14,384*	10,361	131	350	3,572.3	*14,414*	–30	39.02	*–69*
2036	9,448	3,500	800	636	*14,384*	10,361	122	350	3,572.3	*14,405*	–21	39.02	*–60*
2037	9,448	3,500	800	636	*14,384*	10,361	113	350	3,572.3	*14,396*	–12	39.02	*–51*
2038	9,448	3,500	800	636	*14,384*	10,361	106	350	3,572.3	*14,389*	–5	39.02	*–44*
2039	9,448	3,500	800	636	*14,384*	10,361	98	350	3,572.3	*14,381*	3	39.02	*–36*
2040	9,448	3,500	800	636	*14,384*	10,361	90	350	3,572.3	*14,373*	30	39.02	*–9*
2041	9,448	3,500	800	636	*14,384*	10,361	83	350	3,572.3	*14,366*	18	39.02	*–21*
2042	9,448	3,500	800	636	*14,384*	10,361	77	350	3,572.3	*14,360*	24	39.02	*–15*
2043	9,448	3,500	800	636	*14,384*	10,361	71	350	3,572.3	*14,354*	30	39.02	*–9*

Source: CEC 2010; CEC 2009; BLM 2011a; WorleyParsons 2009 (outflow to PVMGB)
1 - Inflow and outflow factors are discussed in detail in Section 3.20.2 (see "Groundwater Resources")

Table 4.20-5b (2,060 afy normal year). Estimated Cumulative Budget for the Chuckwalla Valley Groundwater Basin (afy)

	Inflow (afy)					Outflow (afy)					Balance (afy)		
Year	Precip.	Subsurface Inflow	Irrigation Return	Wastewater Return	*Total Inflow*	Current Pumping	Flow to PVMGB	Palen Lake Evap	Future Pumping	*Total Outflow*	Balance	DHSP Demand	*With-Project*
2012	2,060	953	800	636	*4,449*	10,361	399	350	1,411	*12,521*	–8,072	0	–8,072
2013	2,060	953	800	636	*4,449*	10,361	388	350	1,278.85	*12,378*	–7,929	500.51	–8,430
2014	2,060	953	800	636	*4,449*	10,361	373	350	10,010.90	*21,095*	–16,646	500.51	–17,147
2015	2,060	953	800	636	*4,449*	10,361	360	350	10,010.30	*21,081*	–16,632	39.02	–16,671
2016	2,060	953	800	636	*4,449*	10,361	347	350	10,010.30	*21,068*	–16,619	39.02	–16,658
2017	2,060	953	800	636	*4,449*	10,361	334.5	350	10,010.30	*21,056*	–16,607	39.02	–16,646
2018	2,060	953	800	636	*4,449*	10,361	322	350	4,324.30	*15,357*	–10,908	39.02	–10,947
2019	2,060	953	800	636	*4,449*	10,361	308	350	3,572.30	*14,591*	–10,142	39.02	–10,181
2020	2,060	953	800	636	*4,449*	10,361	295	350	3,572.30	*14,578*	–10,129	39.02	–10,168
2021	2,060	953	800	636	*4,449*	10,361	281.5	350	3,572.30	*14,565*	–10,116	39.02	–10,155
2022	2,060	953	800	636	*4,449*	10,361	269	350	3,572.30	*14,552*	–10,103	39.02	–10,142
2023	2,060	953	800	636	*4,449*	10,361	256.5	350	3,572.30	*14,540*	–10,091	39.02	–10,130
2024	2,060	953	800	636	*4,449*	10,361	245	350	3,572.30	*14,528*	–10,079	39.02	–10,118
2025	2,060	953	800	636	*4,449*	10,361	233	350	3,572.30	*14,516*	–10,067	39.02	–10,106
2026	2,060	953	800	636	*4,449*	10,361	221	350	3,572.30	*14,504*	–10,055	39.02	–10,094
2027	2,060	953	800	636	*4,449*	10,361	210	350	3,572.30	*14,493*	–10,044	39.02	–10,083
2028	2,060	953	800	636	*4,449*	10,361	199.5	350	3,572.30	*14,483*	–10,034	39.02	–10,073
2029	2,060	953	800	636	*4,449*	10,361	190	350	3,572.30	*14,473*	–10,024	39.02	–10,063
2030	2,060	953	800	636	*4,449*	10,361	180	350	3,572.30	*14,463*	–10,014	39.02	–10,053
2031	2,060	953	800	636	*4,449*	10,361	170	350	3,572.30	*14,453*	–10,004	39.02	–10,043
2032	2,060	953	800	636	*4,449*	10,361	160	350	3,572.30	*14,443*	–9,994	39.02	–10,033
2033	2,060	953	800	636	*4,449*	10,361	150	350	3,572.30	*14,433*	–9,984	39.02	–10,023
2034	2,060	953	800	636	*4,449*	10,361	140	350	3,572.30	*14,423*	–9,974	39.02	–10,013
2035	2,060	953	800	636	*4,449*	10,361	131	350	3,572.30	*14,414*	–9,965	39.02	–10,004
2036	2,060	953	800	636	*4,449*	10,361	122	350	3,572.30	*14,405*	–9,956	39.02	–9,995
2037	2,060	953	800	636	*4,449*	10,361	113	350	3,572.30	*14,396*	–9,947	39.02	–9,986
2038	2,060	953	800	636	*4,449*	10,361	106	350	3,572.30	*14,389*	–9,940	39.02	–9,979
2039	2,060	953	800	636	*4,449*	10,361	98	350	3,572.30	*14,381*	–9,932	39.02	–9,971
2040	2,060	953	800	636	*4,449*	10,361	90	350	3,572.30	*14,373*	–9,924	39.02	–9,963
2041	2,060	953	800	636	*4,449*	10,361	83	350	3,572.30	*14,366*	–9,917	39.02	–9,956
2042	2,060	953	800	636	*4,449*	10,361	77	350	3,572.30	*14,360*	–9,911	39.02	–9,950
2043	2,060	953	800	636	*4,449*	10,361	71	350	3,572.30	*14,354*	–9,905	39.02	–9,944

Table 4.20-5c (6,125 afy normal year). Estimated Cumulative Budget for the Chuckwalla Valley Groundwater Basin (afy)

	Inflow (afy)					Outflow (afy)					Balance (afy)		
Year	Precip.	Subsurface Inflow	Irrigation Return	Wastewater Return	*Total Inflow*	Current Pumping	Flow to PVMGB	Palen Lake Evap	Future Pumping	*Total Outflow*	Balance	DHSP Demand	*With-Project*
2012	6,125	1,906	800	636	*9,467*	10,361	399	350	1,411	*12,521*	–3,054	0	–3,054
2013	6,125	1,906	800	636	*9,467*	10,361	388	350	1,278.85	*12,378*	–2,911	500.51	–3,412
2014	6,125	1,906	800	636	*9,467*	10,361	373	350	10,010.90	*21,095*	–11,628	500.51	–12,129
2015	6,125	1,906	800	636	*9,467*	10,361	360	350	10,010.30	*21,081*	–11,614	39.02	–11,653
2016	6,125	1,906	800	636	*9,467*	10,361	347	350	10,010.30	*21,068*	–11,601	39.02	–11,640
2017	6,125	1,906	800	636	*9,467*	10,361	334.5	350	10,010.30	*21,056*	–11,589	39.02	–11,628
2018	6,125	1,906	800	636	*9,467*	10,361	322	350	4,324.30	*15,357*	–5,890	39.02	–5,929
2019	6,125	1,906	800	636	*9,467*	10,361	308	350	3,572.30	*14,591*	–5,124	39.02	–5,163
2020	6,125	1,906	800	636	*9,467*	10,361	295	350	3,572.30	*14,578*	–5,111	39.02	–5,150
2021	6,125	1,906	800	636	*9,467*	10,361	281.5	350	3,572.30	*14,565*	–5,098	39.02	–5,137
2022	6,125	1,906	800	636	*9,467*	10,361	269	350	3,572.30	*14,552*	–5,085	39.02	–5,124
2023	6,125	1,906	800	636	*9,467*	10,361	256.5	350	3,572.30	*14,540*	–5,073	39.02	–5,112
2024	6,125	1,906	800	636	*9,467*	10,361	245	350	3,572.30	*14,528*	–5,061	39.02	–5,100
2025	6,125	1,906	800	636	*9,467*	10,361	233	350	3,572.30	*14,516*	–5,049	39.02	–5,088
2026	6,125	1,906	800	636	*9,467*	10,361	221	350	3,572.30	*14,504*	–5,037	39.02	–5,076
2027	6,125	1,906	800	636	*9,467*	10,361	210	350	3,572.30	*14,493*	–5,026	39.02	–5,065
2028	6,125	1,906	800	636	*9,467*	10,361	199.5	350	3,572.30	*14,483*	–5,016	39.02	–5,055
2029	6,125	1,906	800	636	*9,467*	10,361	190	350	3,572.30	*14,473*	–5,006	39.02	–5,045
2030	6,125	1,906	800	636	*9,467*	10,361	180	350	3,572.30	*14,463*	–4,996	39.02	–5,035
2031	6,125	1,906	800	636	*9,467*	10,361	170	350	3,572.30	*14,453*	–4,986	39.02	–5,025
2032	6,125	1,906	800	636	*9,467*	10,361	160	350	3,572.30	*14,443*	–4,976	39.02	–5,015
2033	6,125	1,906	800	636	*9,467*	10,361	150	350	3,572.30	*14,433*	–4,966	39.02	–5,005
2034	6,125	1,906	800	636	*9,467*	10,361	140	350	3,572.30	*14,423*	–4,956	39.02	–4,995
2035	6,125	1,906	800	636	*9,467*	10,361	131	350	3,572.30	*14,414*	–4,947	39.02	–4,986
2036	6,125	1,906	800	636	*9,467*	10,361	122	350	3,572.30	*14,405*	–4,938	39.02	–4,977
2037	6,125	1,906	800	636	*9,467*	10,361	113	350	3,572.30	*14,396*	–4,929	39.02	–4,968
2038	6,125	1,906	800	636	*9,467*	10,361	106	350	3,572.30	*14,389*	–4,922	39.02	–4,961
2039	6,125	1,906	800	636	*9,467*	10,361	98	350	3,572.30	*14,381*	–4,914	39.02	–4,953
2040	6,125	1,906	800	636	*9,467*	10,361	90	350	3,572.30	*14,373*	–4,906	39.02	–4,945
2041	6,125	1,906	800	636	*9,467*	10,361	83	350	3,572.30	*14,366*	–4,899	39.02	–4,938
2042	6,125	1,906	800	636	*9,467*	10,361	77	350	3,572.30	*14,360*	–4,893	39.02	–4,932
2043	6,125	1,906	800	636	*9,467*	10,361	71	350	3,572.30	*14,354*	–4,887	39.02	–4,926

As discussed in Section 3.20 (see "Colorado River Accounting Surface"), groundwater pumped from the CVGB at or below an elevation of 234 feet amsl can be considered recharge from the adjudicated Colorado River. Groundwater levels in the proposed DHSP area are understood to range from the ground surface to 400 feet bgs. Mitigation Measure WAT-7 (Colorado River Water Supply Plan) is required to ensure that groundwater monitoring data is collected during implementation of the project, and that if the project results in pumping of any groundwater that would be replaced by Colorado River water, conservation actions would be implemented to "replace" the groundwater on an acre-foot by acre-foot basis, equating to a ratio of 1:1. As such, the proposed DHSP would not result in significant impacts associated with the Colorado River or consumptive use of Colorado River water, and would not contribute to cumulative impacts on the Colorado River, including as a result of its hydrologic connectivity with the CVGB.

Surface Water and Drainage Patterns

Implementation of the proposed project or an alternative (Alternatives 5 through 7 and C, D, and E) would include both temporary and permanent areas of disturbance that would result in site-specific alterations to surface waters and drainage patterns. With implementation of the BMPs and mitigation measures presented in Section 4.20.6, construction, operation, and maintenance would not result in substantial effects to surface water and drainage patterns such that erosion, siltation, or flooding would occur on or off site. Other projects that are also identified in the cumulative scenario (see Table 4.1-1) would result in alterations to surface water and drainage patterns in similar ways as the proposed project or an alternative; however, such effects are anticipated to be site-specific and would not occur on the same site as the proposed project or an alternative.

Stormwater Drainage Systems

The proposed project and alternatives (Alternatives 5 through 7 and C, D, and E) would not create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems, and would therefore not have the potential to result in cumulative effects associated with existing or planned stormwater drainage systems. Due to the use and storage of harmful or potentially hazardous materials during the project, there is potential for contributions of sources of polluted runoff to occur, such as if an accidental leak or release of harmful materials were to occur during a storm event; however, such effects would be site-specific and mitigated by actions listed in Section 4.20.6, and would therefore not have the potential to combine with effects of other projects in the cumulative scenario, as related to the contribution of polluted runoff.

Flood Hazard Areas

Infrastructure constructed under the proposed project or an alternative (Alternatives 5 through 7 and C, D, and E) would be designed and engineered to withstand potential flooding and erosion hazards and, with implementation of BMPs and mitigation measures identified in Section 4.20.6, effects associated with impeding or redirecting flood flows would be minimized and/or avoided. It is anticipated that other projects in the cumulative scenario would also place infrastructure within and/or adjacent to areas subject to flooding hazards; however, due to the site-specific nature of potential effects associated with Flood Hazard Areas and the minimization and/or avoidance of potential Flood Hazard Area effects that would occur through implementation of the BMPs and mitigation measures identified in Section 4.20.6, this potential effect of the pro-

posed project or an alternative is not anticipated to combine with similar effects of other projects in the cumulative scenario.

Water Quality

Degradation of surface water quality and/or groundwater quality could occur through the effects of erosion and sedimentation, and/or through the accidental release of hazardous materials, particularly if a storm event occurs during construction activities. Other projects in the cumulative scenario would also have the potential to result in water quality effects associated with erosion and sedimentation and/or the release of hazardous materials. This effect of the proposed project or an alternative (Alternatives 5 through 7 and C, D, and E) would be site-specific in nature and would be minimized and/or avoided through implementation of the BMPs and mitigation measures identified in Section 4.20.6. This potential effect of the proposed project or an alternative would not have potential to combine with similar effects of other projects in the cumulative scenario.

The No Action and No Project Alternatives (Alternatives 1, 2, 3, and A) would not contribute to any cumulative effects. In addition, Alternative B would not contribute to cumulative effects to water resources, as the cumulative scenario assumes concurrent construction of the Desert Sunlight approved gen-tie and Alternative B conductor stringing using the same crew at the same time, with no additional work required for Alternative B beyond what is required for the Desert Sunlight gen-tie.

4.20.16 CEQA Considerations

This section is included in this EIS for future use by CEQA Lead and Responsible agencies, and is not required under NEPA.

CEQA Significance Criteria

The significance criteria listed below are from the Environmental Checklist Form in Appendix G of the CEQA Guidelines. These criteria are used to determine whether the project or alternative would result in significant impacts to water resources under CEQA. The project and alternatives would result in a significant impact to water resources if one of the following criteria is met.

WAT-1 Violate any water quality standards or waste discharge requirements.

WAT-2 Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted).

WAT-3 Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site.

WAT-4 Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.

WAT-5 Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.

WAT-6 Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam.

Additional significance criteria identified in Appendix G of the CEQA Guidelines have been determined either to be inapplicable or to result in no impact associated with the proposed project or an alternative. These criteria, listed below, are not discussed in the following "CEQA Significance Determination" section.

- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.
- Place within a 100-year flood hazard area structures which would impede or redirect flood flows.
- Inundation by seiche, tsunami, or mudflow.
- Otherwise substantially degrade water quality.

The proposed project and alternatives are located within an area that has been designated by FEMA as Flood Zone D, or areas which have not been mapped for Flood Hazard Areas or 100-year flood hazard areas. This does not mean that such flooding potential does not exist, but rather that it has not been quantified or mapped. Flooding risks and potential impacts associated with flooding are addressed under Significance Criterion WAT-6.

The project site is not located near a body of water that would have the potential to be affected by a seiche or tsunami that could result in inundation of the site or surrounding area. With regards to mudflow, mudflow tends to occur on steep slopes where vegetation is not sufficient to prevent rapid erosion, and where specific soil characteristics exist. The project area is generally surrounded by mountainous areas; as described in Section 3.20, the Chuckwalla Mountains are to the south of the valley, Eagle Mountains are to the west and north of the valley, Coxcomb Mountains are to the north of the valley, and Palen Mountains are to the east. However, none of these mountainous areas are in close enough proximity to the proposed project site that the site would be inundated should a mudflow event occur.

Potential impacts associated with water quality are sufficiently addressed under CEQA Significance Criteria WAT-1 through WAT-5. An additional criterion specific to water quality effects is therefore not necessary. CEQA Significance Criteria WAT-1 through WAT-6 are discussed below.

CEQA Significance Determination

Alternative 1. Under Alternative 1, the proposed DHSP would not be approved by the BLM, and BLM would not amend the CDCA Plan. As a result, no solar energy project would be constructed at the project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended. It is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no ground disturbance. Impacts to water resources would not occur.

Alternative 2. Under Alternative 2, the proposed DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site available for future solar energy development. As a result, the DHSP would not be constructed on the project site and BLM would manage the site consistent with the amended land use designation in the CDCA Land Use Plan. Impacts to water resources would not occur.

Alternative 3. Under Alternative 3, the proposed DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site unavailable for future solar energy development. As a result, the DHSP would not be constructed on the project site and BLM would manage the site consistent with the amended land use designation in the CDCA Land Use Plan. Impacts to water resources would not occur.

Alternative 4. Alternative 4 is expected to occur in compliance with all applicable water quality standards and waste discharge requirements. Mitigation Measure WAT-1 (Demonstrate Compliance with Water Quality Permits) would ensure that the project would occur in compliance with all applicable water quality permits and waste discharge requirements associated with construction, operation, and decommissioning activities; potential impacts would be less than significant with mitigation (CEQA Significance Criterion WAT-1).

Construction, operation and maintenance, and decommissioning of Alternative 4 would require a water source, and would meet project water requirements by pumping groundwater from the CVGB. Tables 3.20-2 and 3.20-3 provide several potential water budget scenarios for the CVGB, including consideration to the Desert Sunlight project, and indicate a wide range of potential groundwater conditions; due to varying expert opinion in support of these budgets, this impact analysis considers each potential scenario. Mitigation measures listed in Section 4.20.6 would include the implementation of an Alternative Water Source and Groundwater Offsets (MM WAT-2), and a Groundwater Drawdown Monitoring and Reporting Plan (MM WAT-3). In addition, although Alternative 4 would introduce new impervious features across the site, including areas of soil compaction such as along access roads, these effects would not reduce infiltration rates or patterns such that groundwater supply and recharge to the CVGB would be adversely affected. Implementation of the Drought Water Management and Water Conservation Education Programs required per MM WAT-6 and the Colorado River Water Supply Plan required per MM WAT-7 would also minimize potential impacts to groundwater supply and recharge. Potential impacts would be less than significant with mitigation (CEQA Significance Criterion WAT-2).

Alternative 4 would alter existing drainage patterns on the site, but would not alter the course of any stream or river. A project-specific SWPP would be developed and implemented, and would include BMPs specified in MM WAT-4 to minimize or avoid potential impacts associated with erosion, siltation, and flooding. Alternative 4 would not alter surface runoff such that substantial erosion, siltation, or flooding would occur on or off site; impacts would be less than significant with mitigation (CEQA Significance Criteria WAT-3 and WAT-4).

There is no existing stormwater drainage system(s) in the project area. However, construction of Alternative 4 would result in ground-disturbing activities and the handling and storage of potentially hazardous materials that would have the potential to leak or be accidentally released, resulting in polluted stormwater runoff. With implementation of the BMPs specified in MM WAT-4 and the accidental spill control and environmental training measures required per MM

WAT-9, potential impacts associated with the contribution of polluted runoff would be less than significant (CEQA Significance Criterion WAT-5).

The project area is not located in proximity to a levee or dam, such that the failure of this infrastructure would result in flooding at the DHSP site. The project area is also not located within a FEMA-designated Flood Hazard Area or 100-year Flood Zone; however, the site and surrounding parcels are designated as Flood Zone D, indicating that 100-year floods have not been assessed for this area. As described in Section 3.20, hydrologic analysis conducted in support of the DHSP indicates that 100-year flood depth on the site is anticipated to be three to five feet in depth. In accordance with MM WAT-8, all features constructed under Alternative 4 would be designed and maintained to withstand flood flows on the site, and potential impacts associated with risks associated with flooding would be less than significant (CEQA Significance Criterion WAT-6).

Alternative 4 would contribute to cumulative water supply impacts associated with the use of the CVGB to meet the project's water requirements; however, implementation of Mitigation Measures WAT-2 (Alternative Water Source and Groundwater Offsets) and WAT-3 (Groundwater Drawdown Monitoring and Reporting Plan) would minimize or avoid the project's potential to affect water supply. With implementation of these mitigation measures, the project's contribution to cumulative water supply impacts would be less than significant. Similarly, as described above, Alternative 4 would not result in significant impacts to surface water and drainage patterns stormwater drainage systems, flood hazard areas, or water quality; the project's contribution to cumulative water resources impacts would be less than significant.

Alternative 5. Under Alternative 5 the solar facility site would be constructed the same as Alternative 4, however, project components would be excluded from the WHMA. This represents a very small portion of the site, in an area located away from any identified residences. Therefore, water resources impacts and CEQA significance conclusions for Criteria WAT-1 through WAT-7 regarding construction, operation, and decommissioning would essentially be the identical to Alternative 4, discussed above.

Alternative 6. Similar to Alternative 5, Alternative 6 would also develop a slightly smaller area of the solar facility site than proposed under Alternative 4. Construction activities would occur on the same schedule as for Alternative 4 and would include the same water requirements. The size of the area disturbed on a given day would be smaller under Alternative 6 than under Alternatives 4 and 5, and the potential for associated soil erosion and sedimentation would be marginally less, but for practical purposes and with consideration to the overall project, water quality impacts would be the same as described for Alternative 4. Potential impacts to water resources and the associated CEQA significance conclusions for Criteria WAT-1 through WAT-6 regarding construction, operation, and decommissioning would be identical to Alternative 4, discussed above.

Alternative 7. Similar to Alternative 6, Alternative 7 would also develop a slightly smaller area of the solar facility site than proposed under Alternative 4. Construction activities would occur on the same schedule as for Alternative 4 and would include the same water requirements. The size of the area disturbed on a given day would be smaller under Alternative 7 than under Alternatives 4 and 5, and the potential for associated soil erosion and sedimentation would be marginally less, but for practical purposes and with consideration to the overall project, water quality impacts would be the same as described for Alternative 4. Potential impacts to water

resources and the associated CEQA significance conclusions for Criteria WAT-1 through WAT-6 regarding construction, operation, and decommissioning would be identical to Alternative 4, discussed above.

Alternative A. Under Alternative A, no gen-tie line would be constructed or operated as part of the DHSP. Therefore, no water resources impacts under CEQA Significance Criteria WAT-1 through WAT-7 related to construction, operations and maintenance, or decommissioning would occur.

Alternative B. Alternative B would share gen-tie infrastructure with the Desert Sunlight project; however, because the Desert Sunlight gen-tie is not included in baseline conditions, Alternative B would involve the construction of gen-tie infrastructure. Alternative B would require a water supply of 6.25 afy, and is accounted for in the water availability projections included in the WSA provided as Appendix E. The use of equipment and machinery required to construct, maintain, and decommission gen-tie infrastructure would introduce the potential for localized drainage pattern alternations to occur, as well as introduce the potential for a spill or leak of hazardous materials to occur. Potential impacts would be less than significant with mitigation.

The cumulative scenario for Alternative B includes the Desert Sunlight project; therefore, potential cumulative effects to water resources associated with construction of the proposed gen-tie under Alternative B would be negligible because the same gen-tie would be constructed by Desert Sunlight.

Alternative C. The potential for water resources impacts to occur under Alternative C would be greater than under Alternative B due to the construction of new towers. The use of equipment and machinery required to construct, maintain, and decommission additional infrastructure would increase the potential for a spill or leak of hazardous materials to occur. Potential impacts to water quality could occur from a leak or release of hazardous materials used in construction vehicles and equipment. Potential impacts would be less than significant with mitigation.

Potential impacts of Alternative C would be reduced to a less-than-significant level with the implementation of mitigation measures, and the contributions of Alternative C to cumulative water resources impacts would also be less than significant.

Alternative D. Alternative D would require slightly less temporary and permanent ground disturbance, and potential water quality impacts associated with erosion and sedimentation would also be less. Potential impacts would be less than significant with mitigation.

Alternative E. Alternative E would result in the same potential for impacts to water resources as Alternative D. Potential impacts would be less than significant with mitigation.

4.21 SOLID AND HAZARDOUS WASTES

4.21.1 Methodology for Analysis

Environmental baseline conditions for the impact analysis presented in this section are described in Section 3.21 of this EIS. Solid and hazardous waste effects are assessed here with respect to the following: wastes generated on-site, disposal of wastes generated on-site, septic system, landfill use and capacity, and emergency response and evacuation relevant to hazardous wastes. Hazardous materials and public safety are addressed in Sections 3.13 and 4.13, Public Health and Safety.

4.21.2 Applicant Measures

Applicant measures (AM) relevant to solid and hazardous wastes that would be implemented during project construction, operation and maintenance, and/or decommissioning, as appropriate, are listed in Section 4.13.2 (Applicant Measures, Public Health and Safety): AM HAZ-1 through AM HAZ-9. These AMs have been incorporated as design features of the proposed project (and all action alternatives) and shall be implemented to reduce adverse impacts associated with the project. In some cases, mitigation measures further clarify or expand on AM reporting requirements, timing of implementation, or other details where appropriate. Where there is a conflict between provisions of the mitigation measures imposed and AMs, the mitigation measures take precedence.

4.21.3 Alternative 1 – No Action (No Plan Amendment)

Under Alternative 1, the proposed Desert Harvest Solar Project (DHSP) would not be approved by the BLM, and BLM would not amend the CDCA Plan. As a result, no solar energy project would be constructed on the project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan.

4.21.4 Alternative 2 – No Project Alternative (with Plan Amendment to Find the Site Suitable for Solar Energy Development)

Under Alternative 2, the DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site available for future solar energy development. As a result, the DHSP would not be constructed on the project site and BLM would manage the site consistent with the amended land use designation in the CDCA Plan. It is possible that, as a result of the CDCA Plan amendment, that in the future another solar energy generation project could be proposed with impacts similar to the DHSP, however, such impacts are speculative at this time, and no effects from the DHSP would occur.

4.21.5 Alternative 3 – No Project Alternative (with Plan Amendment to Find the Site Unsuitable for Solar Energy Development)

Under Alternative 3, the DHSP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site unavailable for future solar energy development. As a result, the DHSP would not be constructed on the project site and BLM would manage the site consistent with the amended land use designation in the CDCA Land Use Plan. No impacts from the DHSP would occur.

4.21.6 Alternative 4 – Proposed Solar Project

Construction

Direct Effects

Construction of Alternative 4 would generate wastes on-site such as oily rags, broken and rusted metal and machine parts, defective or broken panels and electrical materials, empty containers, and miscellaneous solid wastes including the refuse generated by workers. These materials would be collected on-site and disposed of in an off-site facility or facilities with sufficient capacity to accept project waste. As discussed in Section 3.21.2, the Riverside County Waste Management Department (RCWMD) operates six landfills (Badlands, Blythe, Desert Center, Lamb Canyon, Mecca II, and Oasis) and has a contract agreement for waste disposal with an additional private landfill (El Sobrante); RCWMD ensures that Riverside County has a minimum of 15 years of capacity, at any time, for future landfill disposal (RCWMD 2011).

Portable bathrooms would be provided on-site during construction of Alternative 4 and would be emptied in an approved off-site facility; domestic wastewater generated during construction of the project would not be disposed of on-site.

Broken cadmium-containing panels are not classified as hazardous wastes because the chemical within PV modules including cadmium are highly stable and would not be available for release to and interaction with the environment. Potential public health and safety effects of broken cadmium-containing PV panels are addressed in Section 4.13, Public Health and Safety.

All construction-related hazardous wastes would be transported and disposed of in compliance with all federal and State laws and regulations governing hazardous wastes, as described in Section 3.21. Through compliance with existing laws and regulations, adverse effects related to the transport and disposal of solid and hazardous wastes would be unlikely to occur. Furthermore, implementation of Mitigation Measure (MM) PHS-1 through MM PHS-6 (Hazardous Materials Management Plan, BMPs for hazardous materials, SPCC Plan, Environmental Health and Safety Plan, Emergency Response and Inventory Plan, Recycling and Disposal of Panels) as required for potential public health and safety effects would minimize any potential risk to public health or the environment related to transportation and disposal of hazardous wastes from project construction.

Indirect Effects

Construction of Alternative 4 would not result in indirect effects associated with solid and hazardous wastes.

Operation and Maintenance

Direct Effects

Operation and maintenance of Alternative 4 would generate minimal waste requiring off-site disposal; such waste is anticipated to include office waste, food scraps from operational workers, and occasional broken components. As with construction waste, operational waste would be collected on-site and transported to an off-site disposal facility or facilities with sufficient capacity to accept project waste. As described above and discussed in Section 3.21.2, the

RCWMD ensures that Riverside County has a minimum of 15 years of capacity, at any time, for future landfill disposal (RCWMD 2011).

Operation and maintenance of Alternative 4 would also include the use, storage, and disposal of the same hazardous and potentially hazardous materials as for the construction phase.

All operational hazardous wastes would be required to be transported and disposed of in compliance with all federal and State laws and regulations governing hazardous wastes, as described in Section 3.21. Mitigation Measures PHS-1 through PHS-6 (Hazardous Materials Management Plan, BMPs for hazardous materials, SPCC Plan, Environmental Health and Safety Plan, Emergency Response and Inventory Plan, Recycling and Disposal of Panels) would reduce effects related to hazardous wastes. The text of these measures is included in Section 4.13 (Public Health and Safety).

Sanitary wastewater would be discharged into an appropriate septic system and leach field that will be permitted by the Riverside County Health District and permitted under a Waste Discharge Requirement (WDR) permit from the Colorado River Basin Regional Water Quality Control Board (RWQCB). Compliance with existing laws and regulations, in combination with implementation of AMs and MMs listed above would minimize potential operational adverse effects related to solid and hazardous wastes.

Indirect Effects

Operation and maintenance of Alternative 4 would not result in indirect effects associated with solid and hazardous wastes.

Decommissioning

Direct Effects

As with construction and operation of the project, waste materials generated during decommissioning of the project would be collected on-site and disposed of in an off-site facility or facilities with sufficient capacity to accept project waste. Any potential effects related to these materials would be reduced by Applicant Measure HAZ-10 and Mitigation Measures PHS-1 through PHS-6 (text in Section 4.13, Public Health and Safety; Hazardous Materials Management Plan, BMPs for hazardous materials, SPCC Plan, Environmental Health and Safety Plan, Emergency Response and Inventory Plan, Recycling and Disposal of Panels). MM PHS-6 specifically addresses proper recycling or disposal of project infrastructure.

AM-HAZ-10 (Decommissioning Plan) includes the Applicant's decommissioning plan. A decommissioning plan will be developed for the project and submitted to the BLM for review and approval; this plan would include procedures designed to ensure public health and safety, including as related to solid and hazardous wastes.

Also as described in the Applicant's POD, the decommissioning strategy for the project may include the following, as relevant to solid and hazardous wastes:

- Provide for recycling the components of the plant: metal, panels, concrete, etc., and proper disposal of all other materials;

- Remove all residual materials and chemicals from the site prior to demolition for reuse at other facilities or disposal at licensed facilities;
- Soils clean-up, if needed, particularly at locations where hazardous materials were used or stored to ensure that clean closure is achieved.

As described in the Applicant's POD, if closure of the project involves the threat or actual release of hazardous substances, procedures will be implemented from the Hazardous Materials Business Plan to be developed specifically for the project. Such procedures will include but not be limited to the following:

- Practices to control any release of hazardous materials;
- Applicable notifications of responsible agencies and the public; and
- Emergency response procedures.

Indirect Effects

Decommissioning of Alternative 4 would not result in indirect effects associated with solid and hazardous wastes.

Mitigation Measures

Applicant Measures noted above from Public Health and Safety (Section 4.13) and MM PHS-1 through MM PHS-6 would minimize effects related to hazardous wastes.

Residual Impacts and Unavoidable Adverse Effects

No unavoidable adverse effects to solid and hazardous wastes would result from implementation of Alternative 4.

4.21.7 Alternative 5 – Solar Project Excluding WHMA

Alternative 5 would remain in the same location as Alternative 4 and would use the same project boundaries as Alternative 4 except that it would exclude the portion of the site which is within the Palen-Ford Wildlife Habitat Management Area (WHMA).

Construction

Excluding the WHMA from development under Alternative 5 would result in proportionately smaller potential effects on solid and hazardous wastes. This difference would be negligible with regard to the potential of Alternative 5 to result in direct or indirect effects related to solid and hazardous wastes. Potential effects on solid and hazardous wastes associated with construction of Alternative 5 would be the same as described in Section 4.21.6 for Alternative 4.

Operation and Maintenance

Potential effects on solid and hazardous wastes associated with operation and maintenance of Alternative 5 would be the same as described in Section 4.21.6 for Alternative 4.

Decommissioning

Potential effects on solid and hazardous wastes associated with decommissioning of Alternative 5 would be the same as described in Section 4.21.6 for Alternative 4.

Mitigation Measures

Mitigation Measures for Alternative 4 would also apply to Alternative 5.

Residual Impacts and Unavoidable Adverse Effects

The construction, operation and maintenance, and decommissioning of Alternative 5 would not result in any unavoidable adverse effects on solid and hazardous wastes.

4.21.8 Alternative 6 – Reduced Footprint Solar Project

Alternative 6 would remain in the same location as Alternative 4 and would use the same site boundaries as Alternative 4 except that it would exclude the 155-acre southern parcel of the project and a small portion of the northern parcel that contains sensitive plant species, crucifixion thorn, as shown on Figure 2-10, Alternative 6: Reduced Footprint Solar Project, in Appendix A.

Construction

Alternative 6 would result in proportionately smaller potential effects on solid and hazardous wastes. This difference would be negligible with regards to the potential of Alternative 6 to result in direct or indirect effects related to solid and hazardous wastes. Potential effects on solid and hazardous wastes associated with construction of Alternative 6 would be the same as described in Section 4.21.6 for Alternative 4.

Operation and Maintenance

Potential effects on solid and hazardous wastes associated with operation and maintenance of Alternative 6 would be the same as described in Section 4.21.6 for Alternative 4.

Decommissioning

Potential effects on solid and hazardous wastes associated with decommissioning of Alternative 6 would be the same as described in Section 4.21.6 for Alternative 4.

Mitigation Measures

Mitigation Measures for Alternative 4 would also apply to Alternative 6.

Residual Impacts and Unavoidable Adverse Effects

The construction, operation and maintenance, and decommissioning of Alternative 6 would not result in any unavoidable adverse effects on solid and hazardous wastes.

4.21.9 Alternative 7 – High-Profile Reduced Footprint Solar Project

Alternative 7 would be constructed within the same project boundaries as Alternative 6. Alternative 7 would encompass an estimated 1,044 acres and would be an estimated 150 MW nominal capacity project. Project details are the same as for Alternative 4, with the only exception being

the overall height of the panels for Alternative 7. Alternative 7 would use high-profile single-axis tracking panels that would have a total height of 15 feet.

Construction

Alternative 7 would result in proportionately smaller potential effects on solid and hazardous wastes. This difference would be negligible with regards to the potential of Alternative 7 to result in direct or indirect effects related to solid and hazardous wastes. Potential effects on solid and hazardous wastes associated with construction of Alternative 7 would be the same as described in Section 4.21.6 for Alternative 4.

Operation and Maintenance

Potential effects on solid and hazardous wastes associated with operation and maintenance of Alternative 7 would be the same as described in Section 4.21.6 for Alternative 4.

Decommissioning

Potential effects on solid and hazardous wastes associated with decommissioning of Alternative 7 would be the same as described in Section 4.21.6 for Alternative 4.

Mitigation Measures

Mitigation Measures for Alternative 4 would also apply to Alternative 7.

Residual Impacts and Unavoidable Adverse Effects

The construction, operation and maintenance, and decommissioning of Alternative 7 would not result in any unavoidable adverse effects on solid and hazardous wastes.

4.21.10 Alternative A – No Gen-Tie

Under Alternative A, no gen-tie line would be constructed or operated. Therefore, no solid and hazardous wastes effects related to construction, operations and maintenance, or decommissioning would occur.

4.21.11 Alternative B – Proposed Gen-Tie (Shared Towers)

Under Alternative B, the proposed gen-tie would utilize transmission infrastructure developed for First Solar's Desert Sunlight Solar Farm (DSSF) project by sharing the approved transmission towers. However, since construction of the DSSF gen-tie line had not yet begun in September 2011, this analysis assumes that the proposed project would include all construction, operations, and decommissioning activities for Alternative B.

Construction

Stringing of the project owner's gen-tie line would occur concurrently with construction of First Solar's gen-tie line. However, since this construction had not yet begun in September 2011, this analysis assumes that the proposed project would require all related construction activities.

Direct Effects

The types of construction activities under Alternative B would be similar to those for Alternative 4; however, less construction would be required for the gen-tie than for the project. Therefore, there would be fewer potential effects related to solid and hazardous wastes.

Indirect Effects

No indirect effects related to solid and hazardous wastes would occur as a result of construction of Alternative B.

Operation and Maintenance

Operation and maintenance of activities under Alternative B would be essentially the same as those for Alternative 4.

Direct Effects

Direct effects of operation and maintenance under Alternative B would be similar to those of Alternative 4; however, less maintenance activity would be required for the gen-tie than for the project. Therefore, there would be fewer potential effects related to solid and hazardous wastes.

Indirect Effects

No indirect effects related to solid and hazardous wastes would occur as a result of operation and maintenance of Alternative B.

Decommissioning

Direct Effects

Decommissioning activities under Alternative B would be similar to those for Alternative 4; however, less decommissioning would be required for the gen-tie than for the project. Therefore, there would be fewer potential effects related to solid and hazardous wastes.

Indirect Effects

No indirect effects related to solid and hazardous wastes would occur as a result of decommissioning of Alternative B.

Mitigation Measures

Mitigation identified for Alternative 4 would also be implemented for Alternative B.

Residual Impacts and Unavoidable Adverse Effects

The construction, operation and maintenance, and decommissioning of Alternative B would not result in any unavoidable adverse effects.

4.21.12 Alternative C – Separate Transmission Towers within Same ROW

Under Alternative C, the gen-tie line would parallel the approved Desert Sunlight gen-tie line, and would be located on separate towers within the same ROW. The same number of towers in a nearly identical alignment to that of the Desert Sunlight towers would be constructed.

Construction

Construction effects would be the same as those of Alternative B.

Operation and Maintenance

Operations and maintenance effects would be the same as those of Alternative B.

Decommissioning

Decommissioning effects would be the same as those of Alternative B.

Mitigation Measures

Measures identified for Alternative 4 would also be implemented for Alternative C.

Residual Impacts and Unavoidable Adverse Effects

The construction, operation and maintenance, and decommissioning of Alternative C would not result in any unavoidable adverse effects.

4.21.13 Alternative D – Cross-Valley Alignment

Construction, operation and maintenance, and decommissioning of Alternative D would be the same as described for Alternative C, except it would require slightly less temporary and permanent ground disturbance.

Construction

Direct Effects

Direct effects related to solid and hazardous wastes would be slightly less under Alternative D due to the need for slightly less ground disturbance, noted above. However, with consideration to the overall project, this difference in potential effects on solid and hazardous wastes would be negligible. Construction effects on solid and hazardous wastes would be the same as described for Alterative B.

Indirect Effects

No indirect effects related to solid and hazardous wastes would occur as a result of construction of Alternative D.

Operation and Maintenance

Operation and maintenance of Alternative D may include repair or replacement of facilities, as necessary. Potential effects related to solid and hazardous wastes would be the same as those of Alternative B.

Decommissioning

Direct Effects

Decommissioning of Alternative D may result in slightly decreased effects related to solid and hazardous wastes associated with slightly decreased land disturbance. However, as with construction, this difference in potential effects on solid and hazardous wastes would be negligible. Decommissioning effects on solid and hazardous wastes would be the same as described for Alternative B.

Indirect Effects

No indirect effects related to solid and hazardous wastes would occur as a result of decommissioning of Alternative D.

Mitigation Measures

Measures identified for Alternative 4 would also apply to Alternative D.

Residual Impacts and Unavoidable Adverse Effects

The construction, operation and maintenance, and decommissioning of Alternative D would not result in any unavoidable adverse effects.

4.21.14 Alternative E – New Cross-Valley Alignment

Construction, operation and maintenance, and decommissioning of Alternative E would be the same as described for Alternative C.

Construction

Effects related to solid and hazardous wastes would be the same under Alternative E as described above for Alternative D.

Operation and Maintenance

Effects related to solid and hazardous wastes would be the same under Alternative E as described above for Alternative D.

Decommissioning

Effects related to solid and hazardous wastes would be the same under Alternative E as described above for Alternative D.

Mitigation Measures

Measures identified for Alternative 4 would also apply to Alternative E.

Residual Impacts and Unavoidable Adverse Effects

The construction, operation and maintenance, and decommissioning of Alternative E would not result in any unavoidable adverse effects.

4.21.15 Cumulative Effects

Cumulative effects related to solid and hazardous wastes can result from individually minor but collectively significant actions taken over time. Major past, present, and reasonably anticipated future land uses and disturbances in the area have been identified in Section 4.1.4 (Cumulative Scenario) in this EIS, and include energy generation, military uses, commercial and residential developments, and roadway improvements. These projects are discussed below as relevant to the project's potential cumulative effects related to solid and hazardous wastes.

Geographic Scope

The geographic extent of the cumulative analysis of solid and hazardous wastes is within the I-10 corridor in Riverside County, as described in Section 4.1.4 (Cumulative Scenario). Past and ongoing development throughout the project area has introduced sources of solid and hazardous wastes which contribute to landfill use and capacity. Tables 4.1-1 and 4.1-2 identify all the existing and foreseeable projects within the cumulative scenario.

Table 4.21-1. Cumulative Projects within the Geographic Scope of Cumulative Analysis

Resource Area / BLM Program Area	Geographic Area of Consideration	Elements to Consider	BLM Authorized and Other Known County Projects/Actions/Activities
Wastes, Solid and Hazardous	Eastern Riverside County	Contribution to landfill use and capacity	All projects listed in Table 4.1-1 and 4.1-2 that would undergo construction for contribution to landfill. Projects with the most similar types of wastes include: • Desert Sunlight Solar Farm • Silverado Power Solar Project • Palen Solar Power Project • Blythe Solar Power Project • NextEra McCoy • McCoy Soleil • Genesis Solar Energy Project • Rice Solar Energy Project • Blythe Airport Solar I Project • Desert Quartzite • Blythe Mesa Solar I • Rio Mesa Solar Electric • Desert Center 50 Solar PV Project

Cumulative Effects Analysis

Most of the Riverside County projects listed in Tables 4.1-1 and 4.1-2 and identified on Figure 4.1-1 in Appendix A have either undergone independent environmental review pursuant to NEPA and/or CEQA or will do so prior to approval. Even if environmental review has not been completed for the cumulative projects described, their effects were considered in the cumulative effects analyses in this EIS.

A cumulative effect related to solid and hazardous wastes would only occur where the project and other projects would result in the same type of solid and hazardous wastes effect within the same timeframe and at the same location. As discussed in this section, there is sufficient disposal capacity through the RCWMD facilities to accommodate the project and other projects within the RCWMD for a minimum of 15 years. Therefore, the project would not result in

adverse cumulative effects associated with landfill use and capacity. In addition, wastes generated on-site would be handled and disposed of appropriately, and in accordance with laws and regulations and BMPs and mitigation measures identified in this analysis.

Potential effects associated with wastes generated on-site and the disposal of wastes generated on-site would be site-specific and would not have potential to combine with similar effects of other projects. The septic system and leach field used for wastewater disposal would be permitted and operated in compliance with existing laws and regulations; the project would not have the potential to result in cumulative effects associated with the septic system and leach field. Off-site disposal would not significantly reduce waste management capacity in the project area. Finally, with regards to hazardous wastes, implementation of required mitigation measures would ensure that there would be no unavoidable adverse effects from the project or any incremental contribution to adverse cumulative effects. With the implementation of required measures and adherence to all regulatory requirements, the incremental effect of the Proposed Action and Alternatives 5 through 7, and C through E related to solid and hazardous wastes would be minimal.

Because construction and project development would not occur, the No Action and No Project Alternatives (Alternatives 1, 2, 3, and A) would not contribute to any cumulative effects. In addition, Alternative B would not contribute to cumulative solid or hazardous waste effects, as the cumulative scenario assumes concurrent construction of the Desert Sunlight approved gen-tie and Alternative B conductor stringing using the same crew at the same time, with no additional work required for Alternative B beyond what is required for the Desert Sunlight gen-tie.

4.21.16 CEQA Considerations

This section is included in this EIS for future use by CEQA Lead and Responsible agencies, and is not required under NEPA.

CEQA Significance Criteria

The significance criteria listed below are from the Environmental Checklist Form in Appendix G of the CEQA Guidelines. These criteria are used to determine whether the project or alternative would result in significant effects to solid wastes under CEQA. CEQA significance criteria for hazardous materials and hazardous wastes are addressed in Section 4.13.16 (CEQA Considerations, Public Health and Safety). The proposed project and alternatives would result in a significant effect related to solid wastes if they would *not*:

WAST-1 Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs

WAST-2 Comply with federal, state, and local statutes and regulations related to solid waste.

CEQA Significance Determination

Because construction and project development would not occur under the No Action and No Project Alternatives (Alternatives 1, 2, 3, and A), these alternatives would not contribute to solid and hazardous waste impacts.

As described above, wastes generated by Alternatives 4 through 7 and B through E would be disposed of through RCWMD facilities. These facilities ensure that Riverside County has a minimum of 15 years of capacity, at any time, for future landfill disposal (RCWMD 2011).

Construction, operation and maintenance, and decommissioning of the proposed project or relevant alternatives would occur in compliance with laws and regulations, and BMPs relevant to the handling of solid wastes. The septic system and leach field used for wastewater disposal would be in compliance with County and RWQCB permitting requirements. Impacts related to hazardous wastes would be minimized by MM PHS-1 through MM PHS-6 (Hazardous Materials Management Plan, BMPs for hazardous materials, SPCC Plan, Environmental Health and Safety Plan, Emergency Response and Inventory Plan, Recycling and Disposal of Panels). Therefore, impacts related to Criterion WAST-1 and WAST-2 would be less than significant.

Cumulative Impacts. As described in Section 4.21.16, because of adequate available disposal capacity, compliance with applicable regulations, and the implementation of mitigation measures addressing hazardous wastes, the proposed project and alternatives would not represent a considerable contribution to any cumulative impacts related to solid and hazardous wastes.

4.22 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

The BLM NEPA Handbook (H-1790-1 Sec. 9.2.9), the CEQ guidelines for implementing NEPA (40 CFR 1502.16), and CEQA Guidelines Section 15126.2 require a discussion of any irreversible or irretrievable commitments of resources which would be caused by implementation of the Proposed Action or one of the action alternatives; the relationship between short-term uses and long-term productivity of the environment (see Section 4.23); and any growth-inducing impacts (see Section 4.15).

Resources irreversibly or irretrievably committed to a proposed action are those used on a long-term or permanent basis. This includes the use of nonrenewable resources such as metal, wood, fuel, paper, aggregate and other natural resources. These resources are considered irretrievable in that they would be used for a proposed action when they could have been conserved or used for other purposes. Another irreversible or irretrievable commitment of resources could be the unavoidable destruction of natural resources that could limit the range of potential uses of that particular environment.

The Proposed Action or any action alternatives would irretrievably commit resources over the 30-year life of the project. Construction of the DHSP would require use of nonrenewable resources. During project operations, oil, gas, and other nonrenewable resources would be consumed for maintenance purposes, although on a limited basis. After 30 years, the DHSP could be decommissioned and the land returned to its pre-project state, or the facility owners may wish to work with the BLM to replace the old facilities with a new re-powering project on the same site. In the event that the project is decommissioned, some of the resources on site could be potentially retrieved for re-use or recycling. However, full site recovery to its pre-project state may not be possible given the 30-year life-span of the DHSP and the many unknown variables that could affect the site. Sensitive desert habitats have potentially lengthy recovery time from disturbances such as grading and site development.

The DHSP is a renewable energy project intended to generate solar energy to reduce reliance on fossil fuels. Over the 30-year life of the DHSP, this renewable energy project would contribute incrementally to the reduction in demand for fossil fuel used to generate electricity, thereby resulting in a positive effect of the commitment of nonrenewable resources to the DHSP.

4.23 SHORT-TERM VS. LONG-TERM PRODUCTIVITY OF THE ENVIRONMENT

The BLM NEPA Handbook (H-1790-1 Sec. 9.2.9) and the CEQ guidelines for implementing NEPA (40 CFR 1502.16) require a discussion of the relationship between short-term uses and long-term productivity of the environment from implementation of the proposed project or one of the action alternatives. "Short term" refers to the total duration of project, and "long term" refers to an indefinite period beyond the project for uses such as natural habitat. The specific impacts of the proposed project and any of the action alternatives vary in kind, intensity, and duration. The project involves tradeoffs between long-term productivity and short-term uses of the environment.

The development of the proposed project or any of the action alternatives would result in short-term uses of the environment typically found with solar energy development. Short-term impacts associated with construction, operation, and decommissioning activities are described in Chapter 4, Environmental Consequences, and include effects to the natural environment, cultural resources, recreation resources, and transportation. One long-term adverse effect of the DHSP is permanent damage to desert habitats, which would adversely affect the long-term productivity of the area, as described in Section 4.21. Mitigation Measure VEG-6 would provide off-site compensation to impacts to vegetation and habitat and compensation lands would be placed under conservation management reducing the long term detrimental effect of the proposed project and alternatives.

Short-term benefits of the DHSP include production of renewable energy. This benefit would be consistent with federal and state goals to increase production of renewable energy and help reduce dependence on fossil fuels. Based on the project expected generation of between 200,000 and 300,000 megawatt-hours (MWh) annually and a system-wide greenhouse gas (GHG) emission factor of 681 pounds of carbon dioxide equivalents per MWh (lbs CO2e/MWh) for electricity provided by California utilities (USEPA 2011) including SCE, the energy produced by the DHSP could displace up to 92,670 metric tons of CO2e per year (MTCO2e/year) that may otherwise be emitted by power plants currently generating electricity for the California system. This displacement of fossil fuel use could occur if the intermittent solar energy produced by the DHSP were fully integrated into the region-wide electrical grid and used to offset higher polluting power plants. The integration of renewable resources into the region-wide electrical grid is controlled by the California Independent System Operator (CAISO), and is beyond the control of the BLM or the project Applicant. Global climate change is expected to have long-term adverse impacts on the natural and human environment. To the extent that the DHSP could contribute to global reductions in GHGs, this would be a long-term benefit of the project in offsetting impacts related to global climate change.

4.24 SUMMARY OF UNAVOIDABLE ADVERSE EFFECTS

Table 4.24-1 summarizes unavoidable adverse effects of the proposed project and the action alternatives. Table 4.24-2 presents a summary of CEQA significant and unavoidable impacts, and is included in this EIS and CDCA Plan Amendment for future use by CEQA Lead and Responsible agencies. Because this project is being analyzed in an EIS under NEPA, there is no requirement for the BLM to determine significance, rather, the BLM must take a "hard look" at the impacts of the alternatives. Therefore, any determination of significance is a determination under CEQA, not NEPA.

Table 4.24-1. Summary of NEPA Unavoidable Adverse Effects

Impact Area	Impact	Description
Air Resources	Construction emissions	Construction of the project would generate emissions of particulate matter (PM2.5 and PM10), VOC, CO, and NOx. Mitigation Measures AIR-1 through AIR-4 would limit these emissions to the extent possible, but models suggest that residual impacts from PM10, VOC, CO, and NOx would be present event with mitigation. Impacts would be temporary, limited to the duration of construction activities.
Biology – Vegetation	On-site habitat loss	Construction and operation of the project would disturb vegetation and habitat during construction and operation. Mitigation measures VEG-1 through VEG-10 are expected to effectively mitigate the majority of the project's adverse impacts to wildlife habitat, although some residual impacts would remain
	Off-site dust	Dust and erosion related to construction, operation, and decommissioning of the project could not be completely contained within the project site, and could impact neighboring habitats, soil, and vegetation. Mitigation measures for biological resources and air quality would limit but not eliminate these impacts.
	On-site special status species	The project would directly remove several special status plants occurring on the project site. Mitigation Measure VEG-7 would reduce these impacts through off-site compensation, but it would not eliminate on-site impacts.
	State-jurisdictional streambeds	The project would impact state-jurisdictional streambeds on and off site through removal and degradation of habitat and vegetation. Mitigation measures for biological resources and water resources would limit, but not eliminate, these impacts.
Biology – Wildlife	On-site habitat loss	The project would disturb wildlife habitat during construction and operation. Impacts to habitat would be reduced by Mitigation Measures VEG-1 through VEG-10. Mitigation Measure VEG-6 specifically requires off-site compensatory habitat protection. Avoidance-related measures for wildlife would also reduce impacts. These measures are expected to effectively mitigate the majority of the project's adverse impacts to wildlife habitat, though some residual impacts would remain.
	Habitat fragmentation	Construction of the project would further fragment and impair the connectivity of wildlife habitat in the upper Chuckwalla Valley. Mitigation measures for wildlife, including Mitigation Measure WIL-9 (contribute to Desert Tortoise Population Connectivity Effectiveness Monitoring Plan), would reduce these effects, but the project would still result in habitat fragmentation.
	Effects on adjacent off-site habitat	Construction, O&M, and decommissioning would create noise, lighting, dust and other disturbances that would affect adjacent off-site habitat. These effects would be minimized by mitigation measures for noise, aesthetics, air quality, and biological resources. However, these impacts would not be eliminated.
	Displacement of wildlife	Wildlife displaced by the project would need to establish new home ranges and would compete for food and other resources with off-site wildlife. Mitigation measures for biological resources would reduce, but not eliminate, these impacts.

Table 4.24-1. Summary of NEPA Unavoidable Adverse Effects

Impact Area	Impact	Description
	Potential loss of birds during O&M	An unquantified number of birds could be killed during project O&M activities. Mitigation measures for biological resources, particularly Mitigation Measure WIL-6 (Bird and Bat Conservation Plan) would reduce, but not eliminate, these potential impacts.
Climate Change	No residual impacts	
Cultural	Adverse change to historic properties	The project would result in indirect impacts during construction, operation, and decommissioning to cultural resources, including adverse change to significance of historic properties. Mitigation Measures MM CUL-1 through MM CUL-9 would reduce impacts by developing and implementing a Memorandum of Agreement and Historic Properties Treatment Plan, requiring monitoring and training for all construction personnel, and treating/curating inadvertent discoveries.
Paleontological Resources	No residual impacts	
Fire and Fuels Management	No residual impacts	
Geology and Soils	No residual impacts	
Mineral Resources	No residual impacts	
Grazing	No residual impacts	
Wild Horses and Burros	No residual impacts	
Lands and Realty	Cumulative adverse change to land use along the I-10 corridor due to the scale of land use conversion	The project would contribute to large scale of land use conversion (over 52,000 acres or 2.5 percent of the land along the I-10 corridor).
Noise and Vibration	Increase in noise levels along Kaiser Road	The project would result in a substantial increase in traffic noise levels during construction and decommissioning along Kaiser Road north of Lake Tamarisk Road. Mitigation Measure NOI-1would limit construction activities to daylight hours; however, there would still be an unavoidable adverse effect from increased noise.
Public Health and Safety	No residual impacts	
Recreation	Effects on wilderness experience	The project would be visible from wilderness areas in the Coxcomb Mountains during construction, operation, and decommissioning. While Mitigation Measures VR-1 through VR-6 would reduce these impacts, there would still be an avoidable adverse effect on wilderness recreation.
Social and Economic Setting	No residual impacts	
Environmental Justice	No residual impacts	
Special Designations	No residual impacts	
Transportation and Public Access	No residual impacts	
Visual Resources	Land scarring and vegetation clearance	Construction of the project would require extensive land scarring and vegetation clearance. Mitigation Measures VR-1 and VR-2 would reduce the visual impacts of these activities, but would not eliminate impacts, which would be long-term and unavoidable.

Table 4.24-1. Summary of NEPA Unavoidable Adverse Effects

Impact Area	Impact	Description
	Structural visual contrast	The project site is visible from a large area and the project would introduce extensive structural visual contrast. Mitigation Measures VR-2 through VR-5 would reduce the impacts of this visual contrast, but unavoidable long-term adverse effects would remain.
	Effects on scenic vistas	The project would be visible from surrounding wilderness areas. Mitigation Measures VR-2 through VR-5 would reduce effects on scenic vistas, but unavoidable adverse effects would remain.
	Inconsistency with public policy	Although the levels of change caused by Alternative 4 would be allowed under the Interim VRM Class IV management objective, the solar facility would be inconsistent, after mitigation, several Riverside County General Plan policies
Water Resources	No residual impacts	
Solid and Hazardous Wastes	No residual impacts	

Table 4.24-2. CEQA Significant Unavoidable Impacts

Impact Area	Significance Criteria	Significant Unavoidable Impact	Description
Air Resources	AR-2	Construction emissions	Construction of the project would generate emissions of particulate matter (PM2.5 and PM10), VOC, CO, and NOx. Mitigation Measures AIR-1 through AIR-4 would limit these emissions to the extent possible, but residual impacts from PM10, VOC, CO, and NOx would still be present after mitigation. Significant, unavoidable impacts would be temporary; these impacts would be limited to the duration of construction activities.
Air Resources	AIR-3	Cumulatively considerable net increase of a criteria pollutant	Implementation of Mitigation Measures AIR-1 and AIR-2 would reduce fugitive dust emissions and engine NOx emissions. However, the daily construction VOC, CO, NOx, PM10 and PM2.5 emissions would exceed the SCAQMD thresholds, resulting in a cumulatively considerable net increase during project construction. Iimpacts to NOx and PM10 during construction would be temporarily significant and unavoidable.
Biology – Vegetation	VEG-1	Cumulative impacts to sensitive natural communities	Even with implementation of Mitigation Measures VEG-1 through VEG-10, the project would represent a considerable contribution to the cumulatively significant regional impacts to sensitive natural communities.
	VEG-2	Cumulative impacts to jurisdictional streambeds	Even with implementation of Mitigation Measures VEG-1 through VEG-10, the project would represent a considerable contribution to the cumulatively significant regional impacts state-jurisdictional streambeds.
Biology - Wildlife	WIL-1	Cumulative impacts to special-status species	Even with implementation of mitigation, the residual impacts of the project would represent a considerable contribution to cumulatively significant habitat loss for special-status wildlife species in the NECO planning area.
	WIL-2	Cumulative impacts to wildlife movement	Even with implementation of mitigation, the minor residual impacts of the project would represent a cumulatively considerable contribution to reduced wildlife movement and connectivity in the upper Chuckwalla Valley.
Climate Change		None	

Table 4.24-2. CEQA Significant Unavoidable Impacts

Impact Area	Significance Criteria	Significant Unavoidable Impact	Description
Cultural	CR-1 and CR-2	Adverse change to historic and archaeological resources	The project would result in direct and indirect impacts during construction, operation, and decommissioning to cultural resources, including adverse change to historic resources and adverse changes to archaeological resources. Mitigation Measures MM CUL-1 through MM CUL-9 would reduce impacts by developing and implementing a Memorandum of Agreement and Historic Properties Treatment Plan, requiring monitoring and training for all construction personnel, and treating/curating inadvertent discoveries. However, some impacts, particularly to the setting of the North Chuckwalla Petroglyph District (CA-RIV-1383, NRHP-listed), may be significant and unavoidable under CEQA.
Paleontological Resources		None	
Fire and Fuels Management		None	
Geology and Soils		None	
Mineral Resources		None	
Grazing		None	
Wild Horses and Burros		None	
Lands and Realty		None	
Noise and Vibration	NZ-4	Increase in noise levels along Kaiser Road	The project would result in a substantial increase in traffic noise levels during construction and decommissioning along Kaiser Road north of Lake Tamarisk Road. Mitigation Measure NOI-1would limit construction activities to daylight hours; however, there would still be a significant unavoidable impact from project construction.
Public Health and Safety		None	
Recreation		None	
Social and Economic Setting		None	
Environmental Justice		None	
Special Designations		None	No significant unavoidable impacts distinct from those analyzed in other sections.
Transportation and Public Access		None	
Visual Resources	V-1	Scenic vistas	Project would be prominently visible from elevated vantage points in the area, and the introduction of industrial character and structural visual contrast would result in significant unavoidable impacts to these scenic vistas.

Table 4.24-2. CEQA Significant Unavoidable Impacts

Impact Area	Significance Criteria	Significant Unavoidable Impact	Description
	V-3	Degrade visual character of the landscape	Project would introduce a prominent built facility with considerable industrial character into an existing landscape presently without such features, causing a substantial degradation of the existing visual character or quality of the site and its surrounding landscape when viewed from the elevated viewpoints in the wilderness areas.
	V-6	Inconsistency with local policies	The moderate to high degree of visual change that would be caused by the proposed solar farm would not be consistent with the following Riverside County General Plan policies: LU 4.1, LU 13.1, LU 13.3, LU 13.5, LU 13.8, LU 20.1, LU 20.2, LU 20.4, DCAP 2.3, DCAP 9.1, and DCAP 10.1.
	V-7	Cumulative visual alteration	The presence of the project would substantially contribute to cumulative visual alteration.
Water Resources		None	
Solid and Hazardous Wastes		None	

CHAPTER 5 – CONSULTATION, COORDINATION, AND PUBLIC PARTICIPATION

5.1 SUMMARY OF THE NEPA PROCESS

This section describes the NEPA Process. The BLM relies on the NEPA Handbook H-1790-1 as guidance for complying with NEPA and the Council on Environmental Quality's NEPA regulations (40 CFR Parts 1500-1508) and the Department of the Interior NEPA Manual.

Scoping Process

The BLM authorization of a Right-of-Way (ROW) grant for the proposed project or an action alternative would require a plan amendment (PA) to the California Desert Conservation Area (CDCA) Plan (BLM 1980), as amended. The BLM prepared the Draft EIS to inform the public about the DHSP and to meet the needs of federal, state, and local permitting agencies considering the project. Scoping is required by NEPA pursuant to the Council on Environmental Quality (CEQ) (40 CFR 1501.7) regulations. The process ensures that significant issues, alternatives, and impacts are addressed in environmental documents and determines the degree to which these issues and impacts will be analyzed in the EIS.

The scoping process includes the following:

- Publishing the Notice of Intent (NOI) to prepare an EIS.
- Conducting public scoping meetings and agency consultation meetings.
- Soliciting comments from the public.
- Documenting all public and agency comments received for the Proposed Action in a Scoping Summary Report (Appendix B).
- Utilizing the information received from the public and agencies to write the Draft EIS.

Notice of Intent

The BLM published a Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS) on September 15, 2011 in Federal Register Volume 76, Number 179. Publication of the NOI began a 30-day comment period that ended on October 17, 2011. The BLM provided a website with project information that describes the various methods for providing public comment on the project including an e-mail address where comments could be sent electronically.

Public Scoping Meetings

Notification for public Scoping Meetings held on October 3 and October 6, 2011 was posted on the BLM's website. In addition, notices were sent to Responsible and Trustee Agencies under CEQA, all landowners within 300 feet of the project boundary, and other interested parties.

Public Scoping Meetings were held on October 3, 2011 at the University of Riverside Palm Desert Graduate Center located at 75080 Frank Sinatra Drive in Palm Desert, California and at the Lake Tamarisk Clubhouse located at 6251 Parkview Drive in Desert Center, California. A public Scoping Meeting was held on October 6, 2011 at the Joshua Tree Community Center located at 6171 Sunburst Street in Joshua Tree, California. A presentation describing the project was made by

enXco, with presentations describing the environmental review process presented by members of the BLM. Attendees were documented by signing in on a voluntary sign-in sheet, including 6 attendees plus KMIR TV at the University of Riverside Palm Desert Graduate Center, 30 attendees at the Lake Tamarisk Clubhouse, and 7 attendees at the Joshua Tree Community Center.

Fifteen comment letters were received during the scoping comment period that ended on October 17, 2011. Comments were received on the following categories: purpose and need, alternatives development, climate change, cultural resources, fire and fuels management, lands and realty, recreation, social and economic values, environmental justice, water resources, solid and hazardous wastes, visual resources, and cumulative effects. A summary of these comments is provided in the Scoping Summary Report (Appendix B). Comments received during the scoping process were addressed in the EIS as presented in Table 5-1.

Table 5-1. Scoping Comments Addressed in the EIS

Issue Area	Addressed
Purpose and Need	Section 1.2 BLM Purpose and Need
Monitoring	Appendix J Mitigation Monitoring and Reporting Plan pursuant to CEQA
Decommissioning	Section 2.5.7 Decommissioning Activities
Public Participation	Chapter 5 & Appendix B
Air Resources	
Existing conditions	Section 3.2.2
Project emissions	Section 4.2.6, Tables 4.2-3 through 4.2-8
Dust control	Section 4.2.6
Cumulative impacts	Section 4.2.15
Effects to Joshua Tree National Park	Section 4.2.6 and Section 4.17.15
Biological Resources	
Endangered species and habitat	Section 4.4.7
Desert tortoise & habitat	Section 4.4.7: Desert Tortoise
Biological opinion and USFWS	Section 4.4.7: MM WIL-2
Avian species	Section 4.4.7: Native Birds, Burrowing Owl, Golden Eagle, Raptors, Woodpecker, Paserines
Wildlife corridors	Section 4.4.7: Wildlife Movement
Mitigation lands	Section 4.3.7: MM VEG-6, Table 4.3-3
Sensitive Plant Species	Section 4.3.7: Special-Status Plants
Invasive Weeds	Section 4.3.7: Invasive Weeds
Sand Transport Corridor	Section 4.3.15: Alternative E
Climate Change	
Benefits of solar energy	Section 4.5.6 Operations and Maintenance
Address climate change and carbon footprint of the project	Section 4.5.6 Tables 4.5-1 and 4.5-2 and Indirect Effects
Mitigation to reduce greenhouse gas emissions	Section 4.5.6 Mitigation Measures
Amount of SF6 gases that would be released by the project	Section 4.5.6 GHG, Alternative 4
Cultural Resources	
Native American Consultation	Section 5 Consultation and Coordination

Table 5-1. Scoping Comments Addressed in the EIS

Issue Area	Addressed
Native American sacred sites	Section 4.6.6 Cultural Resources, Alt 4, and Section 5 Consultation and Coordination
Avoidance of cultural resources	Section 4.6.6, Cultural Resources, Alt 4
California Code §27460 should be followed in case of accidental discovery of human remains	Section 3.6.1, Cultural Resources Applicable Regulations, and Section 4.6.16 CEQA Considerations
Fire and Fuels Management	
Wildfire Risk	Section 4.8.6 Fire and Fuels, Alt 4
Fire study on cadmium-telluride containing panel	Section 4.13.6 Public Health and Safety, Alt 4
Lands and Realty	
Solar Programmatic EIS	Section 4.13.6: Public Health and Safety, Alt 4, Direct Effects
Conflicts with federal, state, tribal, or local land policies	Section 4.13.6 Public Health and Safety, Alt 4
Conflicts with the Eagle Mountain Pumped Storage Project	Section 4.13.6: Public Health and Safety, Alt 4, Direct Effects
Conflicts with rural communities	Section 4.13.6 Public Health and Safety, Alt 4
Conflicts with National Parks	Section 4.13.6 Public Health and Safety, Alt 4, and Section 4.17.15 National Park Service
BLM land management policy; role of County/CEQA	Section 1.2 BLM Purpose and Need, Section 1.8 CEQA Readers' Guide, and Section 4.13.6 Public Health and Safety, Alt 4
Recreation	
Impacts to Joshua Tree National Park	Section 4.14.6 Recreation, Alt 4, and Section 4.17.15 National Park Service
Impacts to Lake Tamarisk recreational opportunities	Section 4.14.6 Recreation, Alt 4
Social and Economics Setting	
influx of people to Desert Center	Section 4.15.6 Social and Economic, Quality of Life
Housing	Section 4.15.6 Social and Economic, Direct Effects
Property Values	Section 4.15.6 Social and Economic, Indirect Effects
Effects to utilities	Section 4.15.6 Social and Economic, Direct Effects
Environmental Justice	
Address environmental justice	Section 3.16 Recreation Affected Environment, and Section 4.16 Recreation Environmental Consequences
Water Resources	
Disclose water requirements	Section 2.5.5 Construction Water Requirements, Section 2.5.6 Operational Water
Impacts to groundwater basin	Section 4.20.6 Groundwater Supply and Recharge
Use of non-groundwater sources/water conservation	Section 4.20.6, MM WAT-2
Water quality/SWPPP	Section 4.20.6 Surface Water and Drainage Patterns, Water Quality, MM WAT-1 and MM WAT-4

Table 5-1. Scoping Comments Addressed in the EIS

Issue Area	Addressed
Minimize impacts to water/washes	Section 4.22.6 Surface Water and Drainage Patterns, Section 4.3.7 Hydrology and Groundwater
Jurisdictional delineation	Section 4.22.6 Jurisdictional Drainages, Section 4.3.2, Table 4.3-1 and MM VEG-1 through VEG-6
Solid and Hazardous Waste	
Hazardous wastes/management	Section 4.21.6 Solid and Hazardous Wastes, MM PHS-1 through PHS-6
Life cycle of panels/recycling	Section 4.13.6, Public Health and Safety, Alt 4, Hazardous Materials, AM-HAZ-10, MM PHS-1, MM PHS-6
Remediation of contaminated sites at solar facility/Phase I or Phase II Environmental Site Assessment	Section 4.13.6 Existing Contamination
Investigation of hazardous materials if buildings are being demolished	No buildings would be demolished (see Chapter 2 Project Description)
Soil Sampling/investigation	Section 4.13.6 Public Health and Safety, Alt 4, Existing Contamination
Visual Resources	
Impacts to wilderness character/Joshua Tree National Park	Section 4.19.6 Visual Resources, Effects Context for Joshua Tree Wilderness and National Park, KOP1 and KOP2
KOPs should depict all visual impact scenarios	Section 3.19.2 Visual Resources, Key Observation Points
Light Pollution	Section 4.19.6 Visual Resources, Alt 4, MM VR-6
Cumulative Impacts	
Consider all existing and reasonably foreseeable projects	Section 4.1.4 Cumulative Scenario, and Tables 4.1-1 and 4.1-2
Analysis should consider approved Desert Sunlight Solar Farm	Section 4.1.4 Cumulative Scenario, and Tables 4.1-1 and 4.1-2
Alternatives	
Types of panels	Section 2.5.4 Photovoltaic Panels
Environmentally sensitive areas	Section 2.7 Alternative 6: Reduced Footprint
Siting renewable energy on disturbed/degraded lands	Section 2.17.2 Alternative Sites
Comparison of alternatives	Section 2.14 Comparison of Alternatives
Environmentally preferred alternative	Section 2.14 Comparison of Alternatives, and Section 2.16 CEQA Environmentally Superior Alt.
Shared gen-tie line alignment	Section 2.10 Alternative B: Shared Towers
Desert wash avoidance	Section 2.7 Alternative 6: Reduced Footprint
Mount panels at a height to maintain natural vegetation	Section 2.17.10 Higher Mounted Panels Alt.
Distributed generation/power sited next to consumption	Section 2.17.4 Distributed/Rooftop PV
Avoid southwestern portion of project/avoids Desert Dry Wash Woodland/avoids siting within the WHMA	Sections 2.6 Alternative 5: Exclude WHMA, and Section 2.7 Alternative 6: Reduced Footprint
Make the site unavailable for energy development	Section 2.4 Alt 3: No Project
Reduce impacts to Joshua Tree National Park	Section 2.7, Section 2.8, and Section 2.17

Draft EIS

The BLM published a Notice of Availability (NOA) for public and agency review and comment of the Desert Harvest Solar Project Draft EIS and CDCA Plan Amendment on April 13, 2012 in the Federal Register. A 90-day comment period is required, and was held, for the project and plan amendment, which ended on July 17, 2012. Comments were accepted by the BLM until July 20, 2012. All comments that were received by BLM were accepted.

Draft EIS Public Information Workshops and Hearings

During the public review period, the BLM hosted public hearings to solicit input from members of the communities and others in the vicinity of the proposed project and alternatives. Information regarding the location and times of the meetings was published on the BLM's website for the project. In addition, a CEQA NOA was provided to the State Clearinghouse by a consultant on behalf of Riverside County, to anyone requesting notice, and to landowners within 300 feet of the project alternatives, including gen-tie alternatives, pursuant to PRC Section 21092.3 and CEQA Guidelines Section 15087(c).

Notifications for public scoping meetings regarding the Draft EIS were posted on the BLM's website. In addition, notices were sent to Responsible and Trustee Agencies under CEQA, all landowners within 300 feet of the project boundary, and other interested parties. Public information hearings were held on May 14, 2012 at the Lake Tamarisk Clubhouse located at 6251 Parkview Drive in Desert Center, California and at the Joshua Tree Community Center located at 6171 Sunburst Street in Joshua Tree, California. BLM representatives made a presentation describing the project. Attendees were documented by signing in on a voluntary sign-in sheet, including 13 attendees at the Lake Tamarisk Clubhouse, and 2 attendees at the Joshua Tree Community Center. A court reporter was present at both meetings to record all oral comments. A total of 37 comment letters containing a total of 552 discrete comments were received during the public comment period that ended on July 17, 2012. The comment letters are presented in Appendix M of the Final EIS; Appendix N provides a summary of and response to all comments. Table 5-2 provides a summary of the frequency of topics covered by the comment letters.

Table 5-2. Comments Received on the Draft EIS

Topic	Frequency of Comment
Affected Environment	3
Air Resources	20
Alternatives	34
Biological Resources – General	11
Biological Resources – Vegetation	48
Biological Resources – Wildlife	122
Climate Change	6
Consultation, Coordination, and Public Participation	7
Cultural Resources	49
Cumulative Scenario and Effects	12
Energy and Mineral Resources	2
Environmental Justice	3

Table 5-2. Comments Received on the Draft EIS

Topic	Frequency of Comment
Fire and Fuels Management	9
General	47
Lands and Realty	15
Mitigation Measures	9
NEPA and CEQA Requirements	6
Noise and Vibration	10
Paleontology	1
Public Health and Safety	2
Recreation	9
Requests for Information	5
Short Term vs. Long Term Productivity of the Environment	1
Social and Economics Setting	8
Soils and Geology	1
Solid and Hazardous Wastes	2
Special Designations	9
Transportation and Public Access	4
Visual Resources	29
Water Resources	59
Support for Alternative 1	2
Support for Alternative 3	3
Support for Alternative 3 with Modifications	1
Support for Alternative 4 with Modifications	1
Support for Alternative 6 with Modifications	1
Support for Alternative 7 with Modifications	1
Support for Alternative 4/7 Combination	1
Support for Distributed and Rooftop Photovoltaic Alternative	2
Opposition	7
Support	3
Support with Modifications	1

Final EIS

The BLM considered each comment submitted on the Draft EIS and, as appropriate, used them to improve the clarity, content, and analysis presented in this Final EIS.

Appeal Period and Protest

A protest is an opportunity for a qualified party (any person who participated in the planning process and has an interest which is or may be adversely affected) to seek an administrative review of a proposed plan amendment decision in accordance with program-specific regulations. The NOA published by the EPA for the CDCA Plan amendment in accordance with 43 CFR 1610.5-2. Specifically, the plan amendment decisions subject to protest are: (i) whether to find the project location suitable or unsuitable for solar energy development, and (ii) whether to allow

the project's gen-tie outside of a designated utility corridor. The protest period ends 30 calendar days after the publication of the Notice of Availability of the Final EIS in the federal register. Instructions for lodging a protest can be found online at: http://www.blm.gov/pgdata/content/wo/en/prog/planning/planning_overview/protest_resolution.html.

Governor's Consistency Review

Pursuant to 43 C.F.R. § 1610.3-2, prior to the approval of a proposed resource management plan, or amendment, the BLM State Director must submit to the State Governor the proposed plan or amendment and identify any known inconsistencies with State or local plans, policies or programs. The Governor has 60 days in which to identify inconsistencies and provide recommendations in writing. If the Governor's written recommendations include changes in the proposed PA that were not raised during the public participation process, then the State Director must provide the public with an opportunity to comment on the recommendations. If the BLM State Office does not accept the Governor's recommendations, then the BLM State Director must notify the Governor in writing and the Governor has 30 days to submit a written appeal.

Record of Decision

After any protests have been resolved, BLM may publish a Record of Decision (ROD) with either an Approved Plan Amendment or no Plan Amendment. Publication and release of the ROD would serve as public notice of the BLM's decision on the project application which is appealable in accordance with 43 CFR Part 4.

5.2 ORGANIZATIONS AND PERSONS CONSULTED

There are a number of formal and informal agreements in place that provide guidance on the relationship between BLM, as Lead Agency on the EIS, and other agencies. These agreements are summarized here.

BLM–County of Riverside Memorandum of Understanding

The County of Riverside has discretionary authority to issue a Conditional Use Permit (CUP), a Public Use Permit (PUP), a Franchise Route Agreement, and an Encroachment Permit for Project gen-tie, evaluated herein as a portion of the Proposed Action. As allowed by the California Environmental Quality Act (CEQA) Guidelines Section 15221, the County of Riverside intends to use this EIS to provide the environmental review required for its decision regarding the approval of the gen-tie under CEQA. The County of Riverside and the BLM have signed an MOU that defines the relationship of the two agencies, and identifies the County of Riverside as a cooperating agency with the BLM. The MOU was fully executed on June 5, 2012. The MOU is included as Appendix L of this EIS. Following preparation of the EIS by the BLM, the County of Riverside will determine whether the EIS complies with the requirements of CEQA and whether it will be used to support its decision on the gen-tie. The County of Riverside was invited by BLM to weekly phone conferences as the EIS was developed. The County was invited to participate, and participated in, the development of the EIS from the date of the Notice of Intent.

Native American Government to Government Consultation

The BLM initiated formal, government-to-government tribal consultation at the earliest stages of project planning by letter on October 4, 2011 (Kalish 2011). The Palm Springs-South Coast Field Office of the BLM sent letters to 15 Indian tribes, including those identified by the NAHC. The letter requested assistance in identifying any issues or concerns that a tribe might have about the project, including identifying places of religious and cultural significance that might be affected by the proposed project. The letter further requested that each Tribal Government identify those tribal representatives who have been designated to consult with BLM on this project.

Since that time, the BLM has followed up with Tribal governments through additional correspondence, communication, and provision of other project information.

The fifteen tribes currently being consulted with on the DHSP are: Agua Caliente Band of Cahuilla Indians, Augustine Band of Cahuilla Mission Indians, Cabazon Band of Mission Indians, Cahuilla Band of Mission Indians, Chemehuevi Indian Tribe, Cocopah Indian Tribe, Colorado River Indian Tribes, Fort Mojave Indian Tribe, Fort Yuma Quechan Indian Tribe, Morongo Band of Mission Indians, Ramona Band of Mission Indians, San Manuel Band of Mission Indians, Soboba Band of Luiseno Indians, Torres-Martinez Desert Cahuilla Indians, and the Twentynine Palms Band of Mission Indians.

On May 9, 2012, BLM and Native American Tribes conducted a field visit to the project site. Representatives from the Augustine Band of Mission Indians and the Colorado River Indian Tribes attended. Tribal representatives expressed the concerns about the geomorphological nature of the project site, and the possibility of subsurface archaeological materials. The archaeological report was approved by the BLM in May 2012. A letter was sent to the Tribes on June 4, 2012 informing them of the availability of the report. Agua Caliente Band of Mission Indians, Colorado River Indian Tribes, and Fort Yuma Quechan Tribe requested a copy of the report. Copies were sent on August 2, 2012, June 11, 2012, and October 22, 2012 respectively. The project was discussed with the Fort Yuma Quechan Tribe on September 26, 2012.

Additional documentation regarding that consultation is provided in Appendix I. Consultation with Indian Tribes, and discussions with Tribal organizations and individuals, has revealed concern about the importance and sensitivity of cultural resources near the DHSP project site, concern about cumulative effects to cultural resources and landscapes.

As the environmental review and Section 106 consultation processes proceed for the DHSP, the BLM will continue to consult with Indian tribes regarding issues or concerns with the project, and on properties to which they attach cultural or religious significance.

Section 106 Consultation and Memorandum of Agreement

The Native American Heritage Commission (NAHC) maintains two databases to assist cultural resources specialists in identifying cultural resources of concern to California Native Americans, referred to here as ethnographic resources. The NAHC Sacred Lands database has records for places and objects that Native Americans consider sacred or otherwise important, such as cemeteries and gathering places for traditional foods and materials. The NAHC Contacts database has the names and contact information for individuals, representing a group or themselves, who have expressed an interest in being contacted about development projects in specified areas. The applicant requests information from the NAHC on the presence of sacred lands in the vicinity of

a proposed project and also requests a list of Native Americans to whom inquiries would be made to identify both additional cultural resources and any concerns the Native Americans may have about a proposed project.

Chambers Group contacted the Native American Heritage Commission (NAHC) in October of 2011 to obtain information on known cultural resources and traditional cultural properties and to learn of any concerns Native Americans may have about the DHSP. The NAHC responded on October 5, 2011 with the information that the Sacred Lands File (SLF) database failed to indicate the presence of Native American cultural resources within the DHSP Area of Potential Effects. The NAHC also forwarded a list of Native American groups or individuals with traditional ties to the project area. This list can be found in Appendix I.

On October 10, 2012, BLM held a meeting of the consulting parties for the Section 106 process for the DHSP. Representatives from the Agua Caliente Band of Cahuilla Indians, Augustine Band of Cahuilla Indians, Cabazon Band of Mission Indians, Colorado River Indian Tribes, Fort Mojave Indian Tribe, San Manuel Band of Mission Indians, Soboba Band of Luiseno Indians, and Twenty-nine Palms Band of Mission Indians attended the meeting. The other consulting parties in attendance at the October 10 meeting included the Applicant and the County of Riverside.

A Memorandum of Agreement (MOA) is being developed for this project as a part of the Section 106 process. The MOA would be among the BLM, SHPO, EDF Renewables, and interested Indian tribes. The Advisory Council on Historic Preservation would be invited to participate. The MOA will include a list of historic properties located within the APE, require that a Historic Property Treatment Plan be developed and implemented prior to the issuance of a Notice to Proceed, provide for review by interested parties of draft documents resulting from implementation of the Historic Property Treatment Plan, provide for the management of unanticipated discoveries of cultural resources, address treatment of Native American human remains, and include reporting requirements. In addition, the MOA provides a phased approach to the identification and evaluation where access to private land to conduct archaeological surveys has not been granted. NRHP eligibility evaluations and treatment of historic properties would be carried out before Project construction. Once the MOA is signed, which will be before the ROD for this EIS is signed, compliance with Section 106 of the NHPA will be considered complete (Kalish 2012).

National Park Service Consultation

The National Park Service (NPS), Joshua Tree National Park, is a Cooperating Agency for preparation of this EIS. The NPS and the BLM have signed an MOU that defines the relationship of the two agencies, and identifies the NPS as a cooperating agency with the BLM. The MOU was fully executed on February 24, 2011. The MOU is included as Appendix L of this EIS. Although NPS has no discretionary decision to issue on the proposed project, NPS has an interest in land development projects that occur within the airshed and viewshed of park resources. On April 20, 2011, BLM met with NPS representatives in Palm Springs, CA to discuss the project and the Cooperating Agency relationship. The NPS was invited by BLM to weekly phone conferences during the development of the EIS process. BLM met with NPS again on September 13, 2011 to discuss incorporation of NPS comments on the administrative draft of the EIS. Comments were received from NPS staff and incorporated into the Draft EIS. The BLM

again met with NPS representatives in Joshua Tree, CA on June 20, 2012 to discuss the Park's preliminary response to the Draft EIS. The Park also submitted formal written comments, which are presented in Appendix M of this Final EIS (see comment letter A004). Comments from NPS staff were accepted and incorporated into this Final EIS.

Federal Endangered Species Act

The BLM is engaging the U.S. Fish and Wildlife Service (USFWS) in the Endangered Species Act (ESA) Section 7 consultation process related to the project concurrently with the NEPA review process. As explained in Sections 3.3 and 3.4, Biological surveys for federally-listed species were completed for the proposed project site and the proposed transmission alternatives prior to preparation of this Final EIS.

BLM submitted a Biological Assessment and a request for formal ESA Section 7 consultation on the proposed project to USFWS on May 8, 2012. Consultation was initiated on June 13, 2012 with a letter from USFWS to BLM (see Appendix C.19 of this Final EIS). In this letter, USFWS requested clarifying information on the project description prior to August 10, 2012. The supplemental clarifying information was submitted to USFWS in the form of a Supplement to the Biological Assessment on July 27, 2012. As of the date of publication of this Final EIS, a Biological Opinion has not been completed by USFWS. BLM will require a final Biological Opinion covering the project prior to its making a final decision on the project.

The USFWS also submitted formal written comments on the Draft EIS, which are presented in Appendix M of this Final EIS (see comment letter A008). Comments from USFWS staff were accepted and incorporated into this Final EIS.

Bald and Golden Eagle Protection Act

BLM coordinated with USFWS regarding the project's potential to take golden eagles from just after the issuance of the Notice of Intent through the preparation of the Final EIS. The BLM considers the development of a Bird and Bat Conservation Strategy to be a viable option to reduce effects of the project on golden eagles. Per Instructional Memorandum 2010-156, a letter of concurrence must be sought by BLM and received from the USFWS that addresses the adequacy of the Bird and Bat Conservation Strategy (formerly known as an Avian Protection Plan [APP] or Avian and Bat Protection Plan [ABPP]). The Applicant has prepared a Draft Bird and Bat Protection Strategy (included as Appendix C-9 of this EIS) to minimize effects on golden eagles. The Applicant is not seeking a permit under the Bald and Golden Eagle Protection Act as take is not anticipated. The USFWS has provided comments on the Draft Bird and Bat Conservation Strategy, and has requested revisions to the strategy prior to issuing a letter of concurrence to BLM.

California Endangered Species Act

California Endangered Species Act (CESA) review and approval is required for impacts to State-listed species. Focused biological surveys for sensitive species have been conducted for all potential project areas. The California Department of Fish and Game (CDFG) is expected to complete a Consistency Determination based upon USFWS's Biological Opinion. The CDFG submitted formal written comments on the Draft EIS, which are presented in Appendix M of this

Final EIS (see comment letter A012). Comments from CDFG staff were accepted and incorporated into this Final EIS.

Other Agency Coordination

The Applicant is coordinating with the U.S. Army Corps of Engineers (USACE), regarding potential project approvals and any associated NEPA regulatory compliance requirements. On May 29, 2012, the USACE provided its Jurisdictional Determination that the DHSP site has no waters of the United States (see Appendix C.11). Additionally, the Colorado River Basin Regional Water Quality Control Board (Region 7) has indicated that 401 Water Quality Certification is not necessary (see Appendix C.11). The Applicant is also coordinating with state and local agencies, including the California Energy Commission, California Department of Transportation, Metropolitan Water District of Southern California, California Regional Water Quality Control Board, and South Coast Air Quality Management District regarding potential project approvals and any associated State and local regulatory compliance requirements.

The BLM and the Applicant are engaged in ongoing coordination with the Federal Energy Regulatory Commission (FERC) regarding access and use restrictions of a FERC exclusion area intercepting the southern parcel of the DHSP.

5.3 SUMMARY OF COMMENTS RECEIVED ON THE DRAFT EIS

The Final EIS and proposed PA presents a summary of comments received on the Draft EIS in Appendix N. The comments received on the Draft EIS are presented in full in Appendix M.

5.4 ADMINISTRATIVE REMEDIES

The BLM and the EPA's Office of Federal Activities will publish separate NOAs for the Final EIS/Proposed PA in the Federal Register when the document is ready to be released to the public. The NOA (that is published by the EPA in the Federal Register) will initiate a 30-day protest period on the Proposed PA. Protests are directed to the Director of the BLM (see "Appeal Period and Protest" in Section 5.1, above) in accordance with 43 CFR 1610.5-2.

Following resolution of any plan amendment protests, the BLM will publish a ROD, which may deny the Proposed Action or approve the project as proposed or with modifications. If the ROD approves the project, the BLM will also modify the CDCA Plan, as applicable. Publication and release of the ROD would serve as public notice of the BLM's decision on the project application which is appealable in accordance with 43 CFR Part 4.

CHAPTER 6 – LIST OF PREPARERS

Though individuals have primary responsibility for preparing sections of the Draft Plan Amendment and Draft EIS, the document is an interdisciplinary team effort. In addition, internal review of the document occurs throughout preparation. Specialists at the BLM's Field Office, State Office, and Washington Office review the analysis and supply information, as well as provide document preparation oversight. Contributions by individual preparers may be subject to revision by other BLM specialists and by management during internal review. Table 6.1 presents an alphabetical list of preparers providing extensive input by agency or group. (Some reviewers and BLM employees and contractors providing editing and rewriting assistance are not included.)

Table 6.1. List of Preparers

Name	Job Title / Primary Responsibility
BLM – California Desert District Office	
McMenimen, Frank	Project Manager
Elser, Lynnette	Planning and Environmental Coordinator
Thomsen, Greg	Project Manager
Thomas, Tiffany	Archaeologist
Queen, Rolla	Archaeologist
Marsden, Kim	Wildlife Biologist
Dalton, John	Visual Resource Management
BLM – State Office	
Meyer-Shields, Elizabeth	Planning and Environmental Coordinator
Wick, Robert	Visual Resource Management
BLM – Washington Office	
Kuizon, Lucia	Paleontologist
McCarty, John	Visual Resource Management
Aspen Environmental Group	
Bagwell, Beth	Cultural Resources, Paleontological Resources
Birdsall, Brewster	Air Resources, Climate Change, Noise
Blewitt, Lisa	Noise
Hawkins, Jacob	Social and Economic Setting, Environmental Justice, Lands and Realty, Special Designations
Huntley, Christian	Biological Resources (Senior)
Lancaster, Jennifer	Biological Resources
Lee, Susan	Principal-in-Charge
McInturff, Alex	Fire and Fuels, Minerals, Grazing, Recreation
Mescher, Aubrey	Soil Resources, Mineral Resources, Water Resources
Mitchell, Marisa	Project Manager, Alternatives, Cumulative Scenario, Transportation and Public Access
Morris, Amy	Management Support
Noorzay, Akbar	Geographic Information Systems, Graphics
Simpson, Kati	Graphics
Tangard, Mark	Editing and Review, Document Production
Michael Clayton Associates	
Clayton, Michael	Visual Resources
Hernandez, Kroone, and Associates	
Cooper, Nancy J.	Traffic and Transportation Analysis

CHAPTER 7 – REFERENCES

EXECUTIVE SUMMARY

None.

SECTION 1 – INTRODUCTION AND PURPOSE AND NEED

None.

SECTION 2 – DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

AWEA (American Wind Energy Association). 2011. Industry Statistics. http://www.awea.org/learnabout/industry_stats/index.cfm. Accessed September 2011.

BLM (U.S. Department of the Interior, Bureau of Land Management). 2012. Solar Energy Development Final Programmatic Environmental Impact Statement. http://solareis.anl.gov/documents/fpeis/Solar_FPEIS_Volume_2.pdf. Accessed October 12, 2012.

_____. 2011. National Environmental Policy Act Compliance for Utility-Scale Renewable Energy Right-of-Way Authorizations. Instruction Memorandum No. 2011-059. U.S. Department of Interior, BLM, Washington, D.C.

_____. 2007. Record of Decision on the Programmatic Environmental Impact Statement on Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States. http://www.blm.gov/pgdata/etc/medialib/blm/wo/Planning_and_Renewable_Resources/veis/dear_reader_letter.Par.95872.File.dat/RecordofDecision.pdf. Accessed July 2012.

_____. 2005. Final Programmatic Environmental Impact Statement on Wind Energy Development on BLM-Administered Lands in the Western United States. http://windeis.anl.gov/documents/fpeis/index.cfm. Accessed July 2012.

CEC (California Energy Commission). 2010. Geothermal Energy in California. http://www.energy.ca.gov/geothermal/. Accessed September 2011.

_____. 2009. Integrated Energy Policy Report 2009. http://www.energy.ca.gov/2009publications/CEC-100-2009-003/CEC-100-2009-003-CMF.PDF. Accessed September 2011.

_____. 2008. An Assessment of Biomass Resources in California, 2007. http://biomass.ucdavis.edu/files/reports/2008-cbc-resource-assessment.pdf. Accessed September, 2011.

CPUC (California Public Utilities Commission). 2011. June 2011: California Solar Initiative 2011 Annual Program Assessment (Legislative Report). http://www.cpuc.ca.gov/PUC/energy/Solar/apa2011.htm. Accessed September 2011.

EERE (Energy Efficiency and Renewable Energy). 2008. Annual Report on U.S. Wind Power Installation, Cost, and Performance Trends: 2008. http://www.nrel.gov/docs/fy08osti/43025.pdf. Accessed April 2012.

enXco. 2011a. Desert Harvest Solar Plan of Development. Submitted to Bureau of Land Management Plan Springs-South Coast Field Office, CA. April.

_____. 2011b. Responses to Data Request #1. October 5, October 11, October 12, and October 13.

_____. 2011c. Response to ROW width request. October 20.

_____. 2011d. Responses to Data Request #2. October 24 and October 25.

_____. 2011e. Responses to Data Request #3. October 28.

SECTION 3.1 – INTRODUCTION AND OVERVIEW

None.

SECTION 3.2 – AIR RESOURCES

CARB (California Air Resources Board). 2011a. Ambient Air Quality Standards available on ARB Website. http://www.arb.ca.gov/research/aaqs/aaqs2.pdf. Accessed September 2011.

_____. 2011b. Portable Equipment Frequently Asked Questions. http://www.arb.ca.gov/portable/perp/perpfaq.pdf. Accessed September 2011.

_____. 2011c. Air Designation Maps available on ARB website. http://www.arb.ca.gov/desig/adm/adm.htm. Accessed September 2011.

_____. 2011d. ARB Top 4 Measurements and Days Above the Standard. http://www.arb.ca.gov/adam/topfour/topfour1.php

_____. 2008a. Advisory Number 377: New Idling Limits for Owners, Operators, Renters or Lessees of In-Use Off-Road Diesel Vehicles, Effective 6/15/08. http://www.arb.ca.gov/msprog/ordiesel/knowcenter.htm. Accessed September 2011.

_____. 2008b. Written Idling Policy Guidelines. http://www.arb.ca.gov/msprog/ordiesel/ordiesel.htm. Accessed September 2011.

DFG (California Department of Fish and Game). 2007. *California Wildlife: Conservation Challenges*. http://www.dfg.ca.gov/wildlife/WAP/docs/report/full-report.pdf. Accessed August 2012.

IMPROVE (Interagency Monitoring of Protected Visual Environments). 2011. IMPROVE Data Resources. http://vista.cira.colostate.edu/improve/Data/IMPROVE/summary_data.htm. Accessed September 2011.

McAuliffe, Joseph R. 2011. Desert Soils. http://www.desertmuseum.org/books/nhsd_desert_soils.php. Accessed September 2011.

SCAQMD (South Coast Air Quality Management District). 2005. Rule 403: Fugitive Dust. http://www.aqmd.gov/rules/reg/reg04/r403.pdf. Accessed September 2011.

USEPA (United States Environmental Protection Agency). 2011a. Currently Designated Nonattainment Areas for All Criteria Pollutants. http://www.epa.gov/oar/oaqps/greenbk/ancl.html. Accessed September 2011.

_____. 2011b. Clean Air Status and Trends Network (CASTNET). http://java.epa.gov/castnet/index.jsp. Accessed September 2011.

WRCC (Western Regional Climate Center). 2011. Twenty Nine Palms California: NCDC 1981-2010 Monthly Normals. http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?catwen+sca. Accessed August 2012.

SECTION 3.3 – BIOLOGICAL RESOURCES – VEGETATION

Baldwin, B. G., S. Boyd, B. J. Ertter, R. W. Patterson, T. J. Rosatti, D. Wilken, and M. Wetherwax (eds.). 2002. The Jepson Desert Manual: Vascular Plants of Southeastern California. University of California Press, Berkeley, California.

Bell, D. 2009. Noteworthy collection Riverside County, California (*Cynanchumutahense*). Crossosoma 35:96.

BLM (U.S. Department of the Interior, Bureau of Land Management). 2011a. Desert Sunlight Solar Farm Project California Desert Conservation Area Plan Amendment and Final Environmental Impact Statement. Palm Springs–South Coast Field Office. April.

_____. 2011b. Plan Amendment/Final EIS for the Genesis Solar Energy Project. Palm Springs–South Coast Field Office. May.

_____. 2010a. Plan Amendment/Final EIS for the Palen Solar Power Project. Palm Springs–South Coast Field Office. August.

_____. 2010b. Special status plants. BLM California State Director's Office, Sacramento. http://www.blm.gov/ca/st/en/prog/ssp.html. Accessed 3 Oct 2011.

_____. 2009. Survey Protocols Required for NEPA/ESA Compliance for BLM Special Status Plant Species. BLM, California State Office, Sacramento.

BLM and CDFG (Bureau of Land Management and California Department of Fish and Game). 2002. Proposed Northern & Eastern Colorado Desert Coordinated Management Plan and Final Environmental Impact Statement. Prepared by the BLM California Desert District Office and the CDFG Inland, Desert and Eastern Sierra Region. July.

Bossard, C. C., J. M. Randall, and M. C. Hoshovsky (eds.). 2000. Invasive Plants of California's Wildlands. University of California Press, Berkeley. 360 pp. [pp.18-19].

CDFG (California Department of Fish and Game). 2011. Special Vascular Plants, Bryophytes, and Lichens List. July.

_____. 2010. Natural Communities List. September. http://www.dfg.ca.gov/biogeodata/vegcamp/pdfs/natcomlist.pdf. Accessed 6 September 2011.

_____. 2009. Protocols for Surveying and Evaluating Impacts on Special Status Native Plant Populations and Natural Communities. CDFG, Sacramento, California. http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/Protocols_for_Surveying_and_Evaluating_Impacts.pdf

CNDDB (California Natural Diversity Database). 2011. Rarefind Version 3.1.1. California Department of Fish and Game. Biogeographic Data Branch. Version Date September 03, 2011.

CNPS (California Native Plant Society). 2011. Inventory of Rare and Endangered Plants (online edition, v8-01a). California Native Plant Society. Sacramento. http://www.cnps.org/inventory. Accessed Aug 2011.

DeGroot, S. J. 2008. Meet Harwood's woolly-star (*Eriastrumharwoodii*). Fremontia 36(4):15-16.

EPA (United States Environmental Protection Agency). 2012. Wetlands Definitions. http://water.epa.gov/lawsregs/guidance/wetlands/definitions.cfm. Accessed August 2012.

Gowen, D. 2008. New taxa following a reassessment of *Eriastrumsparsiflorum* (Polemoniaceae). Madrono 55:82-87.

Holland, R. F. 1986. Preliminary descriptions of the terrestrial natural communities of California. California Department of Fish and Game, Sacramento, CA. 156 pp.

Ironwood (Ironwood Consulting Inc). 2010. Biological Resources Technical Report, Desert Sunlight Solar Farm Project, BLM Case File Number CACA-48649, Riverside County, California. Prepared for Desert Sunlight Holdings, LLC. July 20.

Laudenslayer and Boggs. 1988. Desert scrub. Pages 114-15 in K. E. Mayer and W. F. Laudenslayer, eds., Guide to Wildlife Habitats of California. California Department of Forestry and Fire Protection, Sacramento, California. 166 pp.

Laudenslayer, W. F. 1988. Desert 2ash. Pages 112-13 in K. E. Mayer and W. F. Laudenslayer, eds., Guide to Wildlife Habitats of California. California Department of Forestry and Fire Protection, Sacramento, California. 166 pp.

Lovich, J. E., and D. Bainbridge. 1999. Anthropogenic Degradation of the Southern California Desert Ecosystem and Prospects for Natural Recovery and Restoration. Environmental Management Vol. 24, No. 3, pp. 309–326.

Morefield, J. D. 2006. *Stylocline*. Pages 450-453 *in* Flora of North America Editorial Committee (eds.), Flora of North America vol. 19. Oxford University Press, New York.

Munz , P. A. 1974. A Flora of Southern California. University of California Press, Berkeley. 1086 pp.

Phillips, S. J., and P. W. Comus. 2000. A Natural History of the Sonoran Desert. Arizona-Sonora Desert Museum Press, Tucson, Arizona. 628 pp.

Roberts, F. M., S. D. White, A. C. Sanders, D. E. Bramlet, and S. Boyd. 2004. Vascular plants of western Riverside County, California: An annotated checklist. F. M. Roberts Publications, San Luis Rey, California.

Sawyer, J. O. Jr., T. Keeler-Wolf, and J. Evans. 2009. Manual of California Vegetation, 2nd ed. Sacramento: California Native Plant Society.

Schoenherr, A. A., and J. H. Burk. 2007. Colorado Desert vegetation. Pages 657-682 *in* M. G. Barbour, T. Keeler-Wolf and A. A. Schoenherr, eds., Terrestrial Vegetation of California, 3rd ed. University of California Press, Berkeley, California. 712 pp.

Shreve, F., and I. L. Wiggins. 1964. Vegetation and flora of the Sonoran Desert, vols. 1 and 2. Stanford University Press, Stanford, California.

Spellenberg, R. 2002. Nyctaginaceae. Pages 376-382 in B. G. Baldwin et al., The Desert Jepson Manual: Vascular Plants of Southeastern California. University of California Press, Berkeley, California. 624 pp.

Turner, R. M., J. E. Bowers, and T. L. Burgess. 1995. Sonoran Desert Plants: An Ecological Atlas. University of Arizona Press, Tucson.

USACE (U.S. Army Corps of Engineers). 2008. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0), ed. J. S. Wakeley, R. W. Lichvar, and C. V. Noble. ERDC/EL TR-08-28. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

_____. 1987. Wetlands Delineation Manual. Technical Report Y-87-1. Environmental Laboratory, USACE, Waterways Experiment Station, Vicksburg, MS.

USFWS (United States Fish and Wildlife Service). 2012. National Wetlands Inventory: Map Creation. http://www.fws.gov/wetlands/Data/Map-Creation.html. Accessed August 2012.

_____. 2011. Endangered and threatened wildlife and plants; designation of critical habitat for *Astragaluslentiginosus* var. *coachellae* (proposed rule). Federal Register 76: 53224-53254 (25 Aug).

_____. 2009. *Astragaluslentiginosus* var. *coachellae* (Coachella Valley milk-vetch) 5-Year Review: Summary and Evaluation. Unpublished report, USFWS Carlsbad Fish and Wildlife Office, Carlsbad, California. http://ecos.fws.gov/docs/five_year_review/doc3211.pdf.

_____. 2004. National Standards and Quality Components For Wetlands, Deepwater and Related Habitat Mapping. http://www.fws.gov/wetlands/Documents/National-Standards-and-Quality-Components-for-Wetlands-Deepwater-and-Related-Habitat-Mapping.pdf. Accessed August 2012.

_____. 1996. Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed, and Candidate Plants. http://www.fws.gov/sacramento/ES/Survey-Protocols-Guidelines/Documents/Listed_plant_survey_guidelines.pdf

WRCC (Western Regional Climate Center). 2011. Western U.S. Climate Historical summaries. http://www.wrcc.dri.edu/Climsum.html. Accessed October 2011.

Zouhar, K., J. K. Smith, S. Sutherland, and M. L. Brooks. 2008. Wildland Fire in Ecosystems: Fire and Nonnative Invasive Plants. General Technical Report RMRSGTR-42 Vol. 6, USDA Forest Service Rocky Mountain Research Station, Ogden, Utah: 355 pp.

SECTION 3.4 – BIOLOGICAL RESOURCES – WILDLIFE

Ahlborn, G. 2000. Species Account for Kit Fox (*Vulpes macrotis*). California Wildlife Habitat Relationships System, California Department of Fish and Game, California Interagency Wildlife Task Group.

Beier, P., and S. Loe. 1992. A checklist for evaluating impacts to wildlife movement corridors. Wildlife Society Bulletin 20:434-440.

BLM (U.S. Department of the Interior, Bureau of Land Management). 2011a. Record of Decision – Desert Sunlight Solar Farm Project and Amendment to the California Desert Conservation Area Land Use Management Plan, Riverside County, California. Palm Springs South Coast Field Office. August.

_____. 2011b. Desert Sunlight Solar Farm Project California Desert Conservation Area Plan Amendment and Final Environmental Impact Statement. Palm Springs–South Coast Field Office. April.

_____. 2011c. Plan Amendment/Final EIS for the Genesis Solar Energy Project. Palm Springs–South Coast Field Office. May.

_____. 2010a. Plan Amendment/Final EIS for the Palen Solar Power Project. Palm Springs–South Coast Field Office. August.

_____. 2010b. Special Status Animals in California, Including BLM Designated Sensitive Species. Memorandum issued February 8.

_____. 2002. Record of Decision for Approved Northern & Eastern Colorado Desert Coordinated Management Plan, an Amendment to the California Desert Conservation Area Plan 1980. California Desert District. December.

BLM and CDFG (Bureau of Land Management and California Department of Fish and Game). 2002. Proposed Northern & Eastern Colorado Desert Coordinated Management Plan and Final Environmental Impact Statement. Prepared by the BLM California Desert District Office and the CDFG Inland, Desert and Eastern Sierra Region. July.

Bolster, B. C., editor. 1998. Terrestrial Mammal Species of Special Concern in California. Draft Final Report prepared by P. V. Brylski, P. W. Collins, E. D. Pierson, W. E. Rainey and T. E. Kucera. Report submitted to California Department of Fish and Game Wildlife Management Division, Nongame Bird and Mammal Conservation Program for Contract No.FG3146WM.

CBOC (California Burrowing Owl Consortium). 1993. Burrowing Owl Survey Protocol and Mitigation Guidelines. Alviso, CA. 13 pp.

CDFG (California Department of Fish and Game). 2012. Staff report on burrowing owl mitigation. CDFG, Sacramento, California.

_____. 2011. Special Animals List. January.

CNDDB (California Natural Diversity Database). 2011. Rarefind Version 3.1.1. California Department of Fish and Game. Biogeographic Data Branch. Version Date September 03, 2011.

Cypher, B. L. 2003. Foxes. Pages 511-546 in G. A. Feldhamer, B. C. Thompson, and J. A. Chapman (eds.) Wild Mammals of North America: Biology, Management, and Conservation, 2nd ed. Johns Hopkins University Press, Baltimore, MD.

Fesnock, A. 2012. Personal communication between Scott White of Aspen Environmental Group and Amy Fesnock of BLM.

Ironwood (Ironwood Consulting Inc). 2010. Biological Resources Technical Report, Desert Sunlight Solar Farm Project, BLM Case File Number CACA-48649, Riverside County, California. Prepared for Desert Sunlight Holdings, LLC. July 20.

Jennings, M. R., and M. P. Hayes. 1994. Amphibian and reptile species of special concern in California. California Department of Fish and Game, Sacramento.

LaPre, L. F. 2012. Personal communication between Scott White of Aspen Environmental Group and Larry LaPre of BLM. May 30.

Murphy, R. W., K. H. Berry, T. Edwards, A. E. Leviton, A. Lathrop, and J. D. Riedle. 2011. The dazed and confused identity of Agassiz's land tortoise, *Gopherus agassizii* (Testudines,

Testudinidae) with the description of a new species, and its consequences for conservation. ZooKeys 113: 39–71, doi: 10.3897/ZooKeys.113.1353. http://www.pensoft.net/journals/zookeys/article/1353/the-dazed-and-confused-identity-of-agassiz (accessed 27 Sep 2011).

Spencer, W. D., P. Beier, K. Penrod, K. Winters, C. Paulman, H. Rustigian-Romsos, J. Strittholt, M. Parisi, and A. Pettler. 2010. California Essential Habitat Connectivity Project: A Strategy for Conserving a Connected California. Prepared for California Department of Transportation, California Department of Fish and Game, and Federal Highways Administration.

Stebbins, R. 2003. A field guide to western reptiles and amphibians, 3rd ed. Houghton-Mifflin Co., Boston. 533 pp.

Tull, J. C., and P. R. Krausman. 2001. Use of a wildlife corridor by desert mule deer. Southwestern Naturalist 46:81-86.

USFWS (United States Fish and Wildlife Service). 2011a. Revised Recovery Plan for the Mojave Population of the Desert Tortoise (*Gopherus agassizii*). U.S. Fish and Wildlife Service, Region 8, Pacific Southwest Region, Sacramento, California. May 6.

_____. 2011b. Biological Opinion on the Desert Sunlight Solar Farm Project, Riverside County, California (CACA 48649). Carlsbad Fish and Wildlife Office, Carlsbad, California. July.

_____. 2010a. Preparing for Any Action That May Occur within the Range of the Mojave Desert Tortoise (*Gopherus agassizii*). 2010 Field Season.

_____. 2010b. Endangered and threatened wildlife and plants; review of native species that are candidates or proposed for listing as endangered or threatened; annual notice of findings on resubmitted petitions; annual description of progress on listing actions; proposed rule. Federal Register 75:69222-69294. (10 Nov).

_____. 2009. Eagle permits; take necessary to protect interests in particular localities. Federal Register 74:46836-46879 (11 Sep).

_____. 2007. Protection of eagles; definition of ‘‘disturb.’’ Federal Register 72:31132-31140 (5 Jun).

Western et al. (Western Area Power Administration, California Energy Commission, and Bureau of Land Management). 2010. Draft Environmental Impact Statement/Staff Assessment for the Solar Reserve LLC Rice Solar Energy Project, Riverside County, California (DOE/EIS-0439). October.

SECTION 3.5 – CLIMATE CHANGE

California Natural Resources Agency. 2009. California Climate Adaptation Strategy: A Report to the Governor of the State of California in Response to Executive Order S-13-2008. http://resources.ca.gov/climate_adaptation/docs/Statewide_Adaptation_Strategy.pdf

CARB (California Air Resources Board). 2010a. 1990-2004 inventory by IPCC category and 2000-2008 inventory by IPCC category. http://arb.ca.gov/cc/inventory/data/data.htm. Accessed September 2011.

_____. 2010b. Regulation for the Mandatory Reporting of Greenhouse Gas Emissions. http://www.arb.ca.gov/regact/2010/ghg2010/ghgisor.pdf. Accessed September 2011.

_____. 2008. Climate Change Scoping Plan: December 2008. http://www.arb.ca.gov/cc/scopingplan/document/scopingplandocument.htm. September 2011.

_____. 2007. California 1990 Greenhouse Gas Emissions Level and 2020 Emissions Limit: Staff Report. http://www.arb.ca.gov/cc/inventory/pubs/reports/staff_report_1990_level.pdf. Released on November 16, 2007.

CAT (Climate Action Team). 2006. Climate Action Team Report to Governor Schwarzenegger and the Legislature. March 2006. http://www.climatechange.ca.gov/publications/cat/2006-04-03_FINAL_CAT_REPORT.PDF. Accessed September 2011.

CPUC (California Public Utilities Commission). 2011. Large IOU RPS Procurement Data 2003-2010. March 2006. http://www.cpuc.ca.gov/NR/rdonlyres/B5AF672B-ABB6-4B0F-8F52-AF78D4701677/0/CaliforniaRPSProcurementSummary20032010.xls. Accessed September 2011.

IPCC (Intergovernmental Panel on Climate Change). 2007. Climate Change 2007: Technical Summary of the Working Group I Report. http://www.ipcc.ch/pdf/assessment-report/ar4/wg1/ar4-wg1-ts.pdf. Accessed September 2011.

_____. 2001. Climate Change 2001 Synthesis Report: Summary for Policymakers. http://www.ipcc.ch/pdf/climate-changes-2001/synthesis-spm/synthesis-spm-en.pdf. Accessed September 2011.

McAuliffe, Joseph R. 2011. Desert Soils. http://www.desertmuseum.org/books/nhsd_desert_soils.php. Accessed September 2011.

NOAA (National Oceanic and Atmospheric Administration). 2010. State of the Climate in 2009. The preliminary globally averaged atmospheric. http://www.aoml.noaa.gov/hrd/Landsea/bams-91-7-stateoftheclimate.pdf . Accessed September 2011.

Oak Ridge National Laboratory. 1998a. An Inventory of Data for Reconstructing "Natural Steady-State" Carbon Storage in Terrestrial Ecosystems. http://www.esd.ornl.gov/projects/qen/carbon1.html. Accessed September 2011.

_____. 1998b. Terrestrial Ecosystem Responses to Global Change: A Research Strategy. ORNL/TM-1998/27. http://www.ornl.gov/~webworks/cpr/rpt/1001.pdf. Accessed September 2011.

Stone, Richard. 2008. Have Desert Researchers Discovered A Hidden Loop in the Carbon Cycle? Science 320(5882): 1409-1410.

United States Climate Change Science Program. 2007. The First State of the Carbon Cycle Report (SOCCR): The North American Carbon Budget and Implications for the Global Carbon Cycle. Synthesis and Assessment Product 2.2 http://www.climatescience.gov/Library/sap/sap2-2/final-report/sap2-2-final-all.pdf. Accessed September 2011.

USEPA (United States Environmental Protection Agency). 2010. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2009. http://www.epa.gov/climatechange/emissions/downloads11/US-GHG-Inventory-2011-Executive-Summary.pdf. Accessed September 2011.

_____. 2009. Mandatory Reporting of Greenhouse Gases: Final Rule. Federal Register 74(209): 56260-56519, October 30, 2009. http://www.epa.gov/climatechange/emissions/ghgrulemaking.html. Accessed September 2011.

WC (Weather Channel). 2011. Monthly Average for Twentynine Palms, CA. http://www.weather.com/weather/wxclimatology/monthly/graph/USCA1173?role=. Accessed September 2011.

Wohlfahrt, Georg, et al. 2008. Large Annual Net Ecosystem CO2 Uptake at a Mojave Desert Ecosystem. EGU 2008, April 15, 2008, Vienna.

SECTION 3.6 – CULTURAL RESOURCES

Allen, Rebecca, Matt Bischoff, and R. Scott Baxter. 2010. Field Manual for Documenting the Desert Training Center and California-Arizona Maneuver Area. Prepared for the California Energy Commission. Revised December 2011.

Akyüz, Linda. 2012. BLM Class III Cultural Resources Inventory for the Desert Harvest Solar Farm Project and Three Gen-Tie Alternatives Desert Center Vicinity, Riverside County, California. Prepared for the Bureau of Land Management, Palm Springs Field Office and enXco. Chambers Group, Inc. January 12, 2012.

Auck, Jessica. 2009. DRAFT- A Class I Inventory of Three Parcels Approximately 4,180 Acres in the Chuckwalla Valley, Riverside County, California. Prepared for enXco Development Corporation. Chambers Group Inc. January 2009.

Baxter, R. Scott, Rebecca Allen, and Matt Bischoff. 2010b. DRAFT- Field Manual for Documenting the Desert Training Center and California-Arizona Maneuver Area Cultural Landscape. Prepared for the California Energy Commission. November 1, 2010.

Bean, Lowell John. 1978. "Cahuilla," in Handbook of North American Indians, vol. 8, pp. 575–587, W. C. Sturtevant, ed. Washington, D. C.: Smithsonian Institution.

Bean, Lowell John and Toenjes, James. 2010. Native American Ethnographic Context. Draft Section for the Chuckwalla Valley Prehistoric Trails Network Cultural Landscape: Historic Context, Research Questions, and Resource Evaluation Criteria. ASM Affiliates, Inc. Submitted to The Aspen Energy Group. Copies available from ASM Affiliates, Inc. California.

Bee, R. L. 1983. "Quechan," in Handbook of North American Indians, vol. 10, pp. 86–98, A. Ortiz, ed. Washington, D.C.: Smithsonian Institution.

Bischoff, Matt. 2000. The Desert Training Center/California-Arizona Maneuver Area, 1942-1944 Historical and Archaeological Contexts. Statistical Research, Inc., Tucson, Arizona.

Bischoff, Matt, Scott Baxter, and Rebecca Allen. 2010. DRAFT- Documenting the Desert Training Center and California-Arizona Maneuver Area Cultural Landscape. Prepared for the California Energy Commission. November 1, 2010.

Chandler, Evelyn, Robert Cunningham, Elizabeth Denniston, Jennifer Howard, Melanie Knypstra, and Stephen Pappas. 2010. Class III Cultural Resources Inventory of the Desert Sunlight Solar Farm Project:Desert Center Vicinity, Riverside County, California, Final Draft. Submitted to: U.S. Department of the Interior, Bureau of Land Management.

Renewable Energy Coordinating Office, Palm Springs, CA. Submitted by ECORP Consulting, Inc., Redlands, CA.

Chandler, Evelyn, Robert Cunningham, Elizabeth Denniston, Cary Cotterman, William Sharp, and Roger Mason. 2011. Cultural Resources Evaluation of 57 Resources for the Desert Sunlight Solar Farm Project Desert Center Vicinity, Riverside County, California. ECORP, Redlands.

Crabtree, Robert. 1981. Chapter III- Archaeology. pp. 25 to 54. From A Cultural Resources Overview of the Colorado Desert Planning Units by Von Till Warren, E., R. H. Crabtree, C. N. Warren, M. Knack, and R. McCarty. BLM Cultural Resources Publication, Bureau of Land Management, California.

Goldberg, Susan and Dennis McDougall. 2012. Third Party Review of Archaeological and Built Environment Inventory and Reports by Chambers Group for Desert Harvest Solar Farm Project, Desert Center Vicinity, Riverside County, California. Prepared for Bureau of Land Management, Palm Springs Field Office. Applied Earthworks, Inc. January 21, 2012.

Gruen, J. 1998. Colorado River Aqueduct Recording Project. Groucho Publications.

Harwell, H. O. and Kelly, M. C. S. 1983. "Maricopa," in Handbook of North American Indians, vol. 10, pp. 71–85, A. Ortiz, ed. Washington, D.C.: Smithsonian Institution.

Jennings, C. 1967. Geologic Map of California- Salton Sea Sheet. Published by California Division of Mines and Geology. ftp://ftp.consrv.ca.gov/pub/dmg/pubs/gam/GAM_013_Salton_Sea/GAM_013_Map_1967.pdf .

Jones, T. L. and K. A. Klar (general editors). 2007. California Prehistory: Colonization, Culture, and Complexity. Altamira Press: Lanham, Maryland.

Kroeber, A. L. 1925. Handbook of the Indians of California, Bulletin 78. Washington, D. C., Bureau of American Ethnology, 1925; also, New York: Dover Publications.

Laylander, Don and Jerry Schaefer. 2010. Chuckwalla Valley Prehistoric Trails Network Cultural Landscape: Historic Context, Research Questions, and Resource Evaluation Criteria (DRAFT). Contributions by L. J. Bean and J. Toenjes. Prepared for the California Energy Commission.

Moratto, Michael J. 1984. California Archaeology. Academic Press, Orlando, Florida.

Rondeau, Michael F., Jim Cassidy, and Terry L. Jones. 2007. Colonization Technologies: Fluted Projectile Points and the San Clemente Island Woodworking/Microblade Complex. In California Prehistory: Colonization, Culture, and Complexity, edited by Terry L. Jones and Kathryn A. Klar, pp. 63-70. Altamira Press, Lanham, Maryland.

Stewart, Kenneth M. 1983a. Yumans: Introduction. In Handbook of North American Indians, Vol. 10, California, edited by Alfonso Ortiz, pp. 1-3. William C. Sturtevant, general editor. Smithsonian Institution, Washington, DC.

_____. 1983b. Mojave. In Handbook of North American Indians, Vol. 10, Southwest. Edited by Alfonso Ortiz, pp. 55-70. William C. Sturtevant, general editor. Smithsonian Institution, Washington, DC.

Sutton, Mark Q., Mark E. Basgall, Jill K. Gardner, and Mark W. Allen. 2007. Advances in Understanding Mojave Desert Prehistory. In California Prehistory: Colonization, Culture, and Complexity, edited by Terry L. Jones and Kathryn A. Klar, pp. 229-245. Altamira Press, Lanham, Maryland.

Taylor, T. T. 2005. Draft Historic Context Statement: the Southern California Transmission/Distribution Line Systems within the Angeles National Forest. Report on File at Southern California Edison.

U.S. Strike Command. n.d. Desert Strike: May 17th – 30th 1964, Joint Task Force Mojave and Joint Task Force Phoenix. Gallegos, Dennis (editor). 1980. Cultural Resources Inventory of the Central Mojave and Colorado Desert Regions, California. Prepared by WESTEC Services for the U.S. Department of Interior, Bureau of Land Management, San Diego, California.

Von Till Warren, Elizabeth. 1981. Chapter V- History. pp. 83 to 105. From A Cultural Resources Overview of the Colorado Desert Planning Units by Von Till Warren, E., R. H. Crabtree, C. N. Warren, M. Knack, and R. McCarty. BLM Cultural Resources Publication, Bureau of Land Management, California, 1981.

SECTION 3.7 – PALEONTOLOGICAL RESOURCES

None

SECTION 3.8 – FIRE AND FUELS MANAGEMENT

CAL FIRE (California Department of Forestry and Fire Protection). 2010. Map: Fire Perimeters. http://frap.cdf.ca.gov/projects/fire_data/fire_perimeters/. Accessed October 18, 2011.

_____. 2006. Map: Fire Hazard Severity Zoning DRAFT, 12-2006, Riverside County East. http://frap.fire.ca.gov/projects/hazard/fhz.html. Accessed October 18, 2011.

California Board of Forestry and Fire Protection. 2010. 2010 Strategic Fire Plan for California. http://cdfdata.fire.ca.gov/pub/fireplan/fpupload/fpppdf668.pdf. Accessed October 18, 2011.

NERC (North American Electric Reliability Corporation). 2011. "North American Electric Reliability Corporation Website: About NERC." http://www.nerc.com/page.php?cid=1. Accessed October 18, 2011.

_____. 2006. Transmission Vegetation Management Program. Standard FAC-003-1.

Riverside County Fire Department. 2011. "Fire Stations." http://www.rvcfire.org/opencms/facilities/FireStations/. Accessed October 18, 2011.

Riverside County. 2003. County of Riverside General Plan and Desert Center Area Plan. October 2003.

SECTION 3.9 – SOILS AND GEOLOGY

BLM (U.S. Department of the Interior, Bureau of Land Management). 2011. Desert Sunlight Solar Farm Project California Desert Conservation Area Plan Amendment and Final Environmental Impact Statement. Palm Springs–South Coast Field Office. April. Section 3.8.

Branum, D., S. Harmsen, E. Kalkan, M. Petersen and C. Wills. 2008. "Earthquake Shaking Potential for California: 2008." California Geological Society. http://www.consrv.ca.gov/cgs/information/publications/ms/Documents/MS48_revised.pdf. Accessed October 18, 2011.

Hart, E. W. 1997. Fault-Rupture Hazard Zones in California: California Division of Mines and Geology Special Publication 42. http://cluster3.lib.berkeley.edu/EART/UCONLY/CDMG/north/sp42.pdf. Accessed October 18, 2011.

McAuliffe, Joseph R. 2011. Desert Soils. http://www.desertmuseum.org/books/nhsd_desert_soils.php. Accessed September 2011.

Riverside County. 2003. County of Riverside General Plan and Desert Center Area Plan. October 2003.

USGS (United States Geological Survey). 2011. "Quaternary Faults in Google Earth." http://earthquake.usgs.gov/hazards/qfaults/google.php. Accessed October 18, 2011.

_____. 2005. "California Geologic Map Data." http://tin.er.usgs.gov/geology/state/state.php?state=CA. Accessed October 18, 2011.

Working Group on California Earthquake Probabilities. 2008. The Uniform California Earthquake Rupture Forecast, Version 2 [UCERF 2]: U.S. Geological Survey Open-File Report 2007-1437 and California Geological Survey Special Report 203, 104 p.

SECTION 3.10 – ENERGY AND MINERAL RESOURCES

BLM (U.S. Department of the Interior, Bureau of Land Management). 2011a. BLM: California: What We Do: Energy: Geothermal. http://www.blm.gov/ca/st/en/prog/energy/geothermal.html. Accessed October 11, 2011.

_____. 2011b. Renewable Energy and the BLM: Wind. http://www.blm.gov/pgdata/etc/medialib/blm/wo/MINERALS__REALTY__AND_RESOURCE_PROTECTION_/energy.Par.82982.File.dat/09factsheet_Wind.pdf. Accessed October 10, 2011.

_____. 2011c. BLM Fact Sheet – Renewable Energy and the BLM: Solar. http://www.blm.gov/pgdata/etc/medialib/blm/wo/MINERALS__REALTY__AND_RESOURCE_PROTECTION_/energy/solar_and_wind.Par.56734.File.dat/10factsheet_Solar_120810.pdf. Accessed October 10, 2011.

_____. 2011d. Mining Claims and Sites on Federal Lands. http://www.blm.gov/pgdata/etc/medialib/blm/wo/MINERALS__REALTY__AND_RESOURCE_PROTECTION_/energy.Par.28664.File.dat/MiningClaims.pdf. Accessed October 11, 2011.

_____. 2005. Final Programmatic Environmental Impact Statement on Wind Energy Development on BLM-Administered Lands in the Western United States. Volume 1, Chapter 4. http://www.windeis.anl.gov/documents/fpeis/maintext/Vol1/Vol1Ch4.pdf. Accessed October 10, 2011.

DOC (California Department of Conservation). 2001. Oil, Gas, and Geothermal Fields in California 2001. ftp://ftp.consrv.ca.gov/pub/oil/maps/Map_S-1.pdf. Accessed October 10, 2011.

_____. 2000. California Surface Mining and Reclamation Policies and Procedures, Guidelines for Classification and Designation of Mineral Lands. http://www.conservation.ca.gov/smgb/Guidelines/Documents/ClassDesig.pdf. Accessed October 4, 2011.

MRDS (Mineral Resources Data System). 2011. Mineral Resources Online Spatial Data: conterminous US. http://tin.er.usgs.gov/mrds/. Accessed October 10, 2011.

RCIP (Riverside County Integrated Project). 2008. Chapter 5: Multipurpose Open Space Element. Figure OS-5, Mineral Resources. http://www.tlma.co.riverside.ca.us/genplan/general_plan_2008/general_plan/Chapter_5_Multipurpose_Open_Space_Element_2008.pdf. Accessed October 4, 2011.

SECTION 3.11 – LANDS AND REALTY

BLM (U.S. Department of the Interior, Bureau of Land Management). 2011. Desert Sunlight Solar Farm Project California Desert Conservation Area Plan Amendment and Final Environmental Impact Statement. Palm Springs–South Coast Field Office. April.

California Department of Conservation, Division of Land Resource Protection. 2006. Riverside County Williamson Act Lands 2007. ftp://ftp.conservation.ca.gov/pub/Dlrp/WA/Map%20and%20PDF/Riverside/RiversideWA_07_08.pdf. Accessed October 19, 2011.

CEC (California Energy Commission) and BLM (U.S. Department of the Interior, Bureau of Land Management). 2010. Staff Assessment and Draft Environmental Impact Statement, Palen Solar Power Project. March 2010.

Office of Energy Efficiency and Renewable Energy and Bureau of Land Management. 2010. Solar Energy Development Programmatic Environmental Impact Statement (PEIS). http://solareis.anl.gov/maps/alternatives/index.cfm. Accessed October 19, 2011.

Riverside County. 2003. County of Riverside General Plan and Desert Center Area Plan. October 2003.

SECTION 3.12 – NOISE AND VIBRATION

NPS (National Park Service), U.S. Department of the Interior. 2006. "Management Policies 2006: The Guide to Managing the National Park System". http://www.nps.gov/policy/mp/policies.html. Accessed July 23, 2012.

SECTION 3.13 – PUBLIC HEALTH AND SAFETY

BLM (U.S. Department of the Interior, Bureau of Land Management). 2011. Desert Sunlight Solar Farm Project California Desert Conservation Area Plan Amendment and Final Environmental Impact Statement. April. Section 3.11 Public Health and Safety and Appendix J. Phase I Environmental Site Assessment Report.

CCPUC California Public Utilities Commission). 2006. Southern California Edison's Devers–Palo Verde 500 kV No. 2 Project. Application Number A.05-04-015, Final Environmental Impact Report/Environmental Impact Statement. California SCH #2005101104. http://www.cpuc.ca.gov/environment/info/aspen/dpv2/toc-feir.htm

Illinois Institute of Technology Research Institute. 1979. The Effects of 60 Hz Electrical and Magnetic Fields on Implanted Cardiac Pacemakers, EPRI Report EA-1174.3.

Riverside County Redevelopment Agency. 2009. First Amendment to the Disposition and Development Agreement, Desert Center Airport, Promissory Note and Deed of Trust Between Redevelopment Agency and Chuckwalla Valley Associates, LLC. September 24, 2009. http://www.clerkoftheboard.co.riverside.ca.us/agendas/2009/11_03_2009/04.02.pdf

Riverside County. 2003. County of Riverside General Plan and Desert Center Area Plan. October 2003. http://www.rctlma.org/genplan/general_plan_2008/area_plan_vol_2/Desert_Center_Area_Plan_2008.pdf. Accessed September 2011.

United States Department of Energy. 2006. Memorandum-Need to Consider Intentionally Destructive Acts in NEPA Documents. Office of NEPA Policy and Compliance. December 1, 2006. http://energy.gov/sites/prod/files/nepapub/nepa_documents/RedDont/G-DOE-intentdestructacts.pdf

University of Rochester. 1985. Evaluations of the Effects of Electrical Fields on Implanted Cardiac Pacemakers. EPRI Report EA-3917.

WHO (World Health Organization). 2011. Typical exposure levels at home and in the environment. http://www.who.int/peh-emf/about/WhatisEMF/en/index3.html. Accessed September 2011.

SECTION 3.14 – RECREATION

BLM (U.S. Department of the Interior, Bureau of Land Management). 2011. Desert Sunlight Solar Farm Project California Desert Conservation Area Plan Amendment and Final Environmental Impact Statement. Palm Springs–South Coast Field Office. April.

_____. 2001. U.S. Department of the Interior, Bureau of Land Management and Office of the Solicitor (editors). The Federal Land Policy and Management Act, as amended. Office of Public Affairs, Washington, D.C.

_____. 1980. California Desert Conservation Area Plan 1980, as amended March 1999.

Jette, C., A. Blotkamp, Y. Le, S. J. Hollenhorst. 2011. Joshua Tree National Park: Winter 2010. National Park Service, Fort Collins, Colorado.

Riverside County. 2003. County of Riverside General Plan and Desert Center Area Plan. October 2003.

SECTION 3.15 – SOCIAL AND ECONOMIC SETTING

BEA (Bureau of Economic Analysis). 2011. CA25N Total Full-time and Part-time Employment by NAICS Industry. http://www.bea.gov/iTable/iTable.cfm?reqid=70&step=1&isuri=1&acrdn=5. Accessed October 19, 2011.

Berkman, Leslie. 2011. "Riverside County: More study of solar fee ordered." June 28. Riverside Press Enterprise. http://www.pe.com/business/business-headlines/20110629-riverside-county-more-study-of-solar-fee-ordered.ece. Accessed October 19, 2011.

BLM (U.S. Department of the Interior, Bureau of Land Management). 2011. Desert Sunlight Solar Farm Project California Desert Conservation Area Plan Amendment and Final Environmental Impact Statement. Palm Springs–South Coast Field Office. April.

BLM and CEC (Bureau of Land Management and California Energy Commission). 2009. Draft Environmental Impact Statement and Draft California Desert Conservation Area Plan Amendment, Ivanpah Solar Electric Generating System, Application for Certification (07-AFC-5), San Bernardino County. October 2009.

BLS (Bureau of Labor Statistics). 2011a. Labor force data by county, not seasonally adjusted, June 2010 to July 2011(p). http://www.bls.gov/lau/#tables. Accessed September 20, 2011.

_____. 2011b. Local Area Unemployment Statistics, California. 2010 to 2011. http://www.bls.gov/lau/. Accessed September 20, 2011.

CADOF (California Department of Finance). 2011a. E-4 Population Estimates for Cities, Counties and the State, 2000–2010, with 2010 Benchmark. Sacramento, California. http://www.dof.ca.gov/research/demographic/reports/estimates/e-4/2001-10/view.php. Accessed September 20, 2011.

_____. 2011b. E-2 California County Population Estimates and Components of Change by Year, July 1, 2000-2010. Sacramento, California. http://www.dof.ca.gov/research/demographic/reports/estimates/e-2/2000-10/view.php. Accessed September 20, 2011.

_____. 2011c. E-5 Population and Housing Estimates for Cities, Counties, and the State, 2010-2011, with 2010 Benchmark. Sacramento, California. http://www.dof.ca.gov/research/demographic/reports/estimates/e-5/2011-20/view.php. Accessed September 20, 2011.

_____. 2011d. Census Data 2010 County Demographic Profiles. Sacramento, California. http://www.dof.ca.gov/research/demographic/state_census_data_center/census_2010/view.php. Accessed September 21, 2011.

_____. 2007. Population Projections by Race / Ethnicity, Gender and Age for California and Its Counties 2000–2050, Sacramento, California. http://www.dof.ca.gov/research/demographic/reports/projections/p-3/. July 2007. Accessed Sept 28 2011.

_____. 1990. E-4 Population Estimates for California Cities and Counties, January 1, 1981 to January 1, 1990, Sacramento, California. http://www.dof.ca.gov/research/demographic/reports/estimates. January 1990.

California Gazetteer. 2011. Riverside County, CA, Hospitals. http://california.hometownlocator.com/features/cultural,class,hospital,scfips,06065.cfm. Accessed September 20 2011.

California Highway Patrol. 2011. CHP Border Division. http://www.chp.ca.gov/depts_divs_offs/601.html. Accessed September 20, 2011.

Education Data Partnership. 2011. County Reports, Riverside 2009-2010. Sacramento, California, December 2011. http://www.ed-data.k12.ca.us/App_Resx/EdDataClassic/fsTwoPanel.aspx?#!bottom=/_layouts/EdDataClassic/profile.asp?Tab=0&level=05&reportnumber=16. Accessed Septermber 20, 2011.

Riverside County Board of Supervisors. 2011. "Submittal to the Board of Supervisors, County of Riverside, State of California: Board Policy B-29 Pertaining to Solar Power Plants." http://rivcocob.com/agenda/2011/09_27_11/03.02.pdf. Accessed October 19, 2011.

Riverside County Fire Department. 2011. Fire Stations. http://www.rvcfire.org/opencms/facilities/FireStations/. Accessed September 20, 2011.

Riverside County Sheriff's Department. 2011. Sheriff's Stations and Contract Cities. http://www.riversidesheriff.org. Accessed September 20, 2011.

Riverside County. 2003. County of Riverside General Plan and Desert Center Area Plan. October 2003.

U.S. Census Bureau. 2011. Poverty Thresholds for 2010 by Size of Family and Number of Related Children Under 18 Years. http://www.census.gov/hhes/www/cpstables/032011/pov/new35_000.htm. Accessed September 21, 2011. Last modified September 13, 2011.

_____. 2010a. Poverty Thresholds 1999. http://www.census.gov/hhes/www/poverty/data/threshld/thresh99.html. Accessed September 21, 2011. Last Modified September 16, 2010.

_____. 2010b. Small Area Income and Poverty Estimates – Counties in California: 2009. Final Release Date: December 2010. http://www.census.gov/did/www/saipe/data/statecounty/data/2009.html. Accessed September 21, 2011.

SECTION 3.16 – ENVIRONMENTAL JUSTICE

BLS (Bureau of Labor Statistics). 2011a. Labor force data by county, not seasonally adjusted, June 2010 to July 2011(p). http://www.bls.gov/lau/#tables. Accessed September 20, 2011.

_____. 2011c. Local Area Unemployment Statistics, California. 2010 to 2011. http://www.bls.gov/lau/. Accessed September 20, 2011.

CADOF (California Department of Finance). 2011a. E-2 California County Population Estimates and Components of Change by Year, July 1, 2000-2010. Sacramento, California. http://www.dof.ca.gov/research/demographic/reports/estimates/e-2/2000-10/view.php. Accessed September 20, 2011.

_____. 2011b. E-4 Population Estimates for Cities, Counties and the State, 2000–2010, with 2010 Benchmark. Sacramento, California. http://www.dof.ca.gov/research/demographic/reports/estimates/e-4/2001-10/view.php. Accessed September 20, 2011.

_____. 2011c. E-5 Population and Housing Estimates for Cities, Counties, and the State, 2010-2011, with 2010 Benchmark. Sacramento, California. http://www.dof.ca.gov/research/demographic/reports/estimates/e-5/2011-20/view.php. Accessed September 20, 2011.

_____. 2011d. Census Data 2010 County Demographic Profiles. Sacramento, California. http://www.dof.ca.gov/research/demographic/state_census_data_center/census_2010/view.php. Accessed September 21, 2011.

_____. 2007b. Population Projections for California and Its Counties 2000-2050, by Age, Gender and Race/Ethnicity, Sacramento, California. http://www.dof.ca.gov/research/demographic/ reports/estimates. July 2007.

_____. 1990. E-4 Population Estimates for California Cities and Counties, January 1, 1981 to January 1, 1990, Sacramento, California. http://www.dof.ca.gov/research/demographic/ reports/estimates. January 1990.

California Gazetteer. 2011. Riverside County, CA, Hospitals. http://california.hometownlocator.com/features/cultural,class,hospital,scfips,06065.cfm. Accessed September 20 2011.

California Highway Patrol. 2011. CHP Border Division. http://www.chp.ca.gov/depts_divs_offs/601.html. Accessed September 20, 2011.

Education Data Partnership. 2011. County Reports, Riverside 2009-2010. Sacramento, California, December 2011. http://www.ed-data.k12.ca.us/App_Resx/EdDataClassic/fsTwoPanel.aspx?#!bottom=/_layouts/EdDataClassic/profile.asp?Tab=0&level=05&reportnumber=16. Accessed Septermber 20, 2011.

Riverside County Fire Department. 2011. Fire Stations. http://www.rvcfire.org/opencms/facilities/FireStations/. Accessed September 20, 2011.

Riverside County Sheriff's Department. 2011. Sheriff's Stations and Contract Cities. http://www.riversidesheriff.org. Accessed September 20, 2011.

U.S. Census Bureau. 2011. Poverty Thresholds for 2010 by Size of Family and Number of Related Children Under 18 Years. http://www.census.gov/hhes/www/cpstables/032011/pov/new35_000.htm. Accessed September 21, 2011. Last modified September 13, 2011.

_____. 2010a. Poverty Thresholds 1999. http://www.census.gov/hhes/www/poverty/data/threshld/thresh99.html. Accessed September 21, 2011. Last modified September 16, 2010.

_____. 2010b. Small Area Income and Poverty Estimates – Counties in California: 2009. Final Release Date: December 2010. http://www.census.gov/did/www/saipe/data/statecounty/data/2009.html. Accessed September 21, 2011.

SECTION 3.17 – SPECIAL DESIGNATIONS

BLM (U.S. Department of the Interior, Bureau of Land Management). 2011a. Plan Amendment/Final EIS for the Palen Solar Power Project, Appendix I. May.

_____. 1986. Alligator Rock Area of Critical Environmental Concern Final Management Plan and Environmental Assessment. September 1986.

_____. 1980. California Desert Conservation Area Plan 1980, as amended March 1999.

BLM and CDFG (U.S. Department of the Interior, Bureau of Land Management, and California Department of Fish and Game. 2002. Northern and Eastern Colorado (NECO) Desert Coordinated Management Plan and Final Environmental Impact Statement. BLM, California Desert District and CDFG, Inland, Deserts, and Eastern Sierra Region.

Jette, C., A. Blotkamp, Y. Le, S. J. Hollenhorst. 2011. Joshua Tree National Park: Winter 2010. National Park Service, Fort Collins, Colorado.

Riverside County. 2003. County of Riverside General Plan and Desert Center Area Plan. October 2003.

SECTION 3.18 – TRANSPORTATION AND PUBLIC ACCESS

AirNav, LLC. 2010. Federal Aviation Administration Information. http://www.airnav.com/airports/us/CA. Accessed September 2011.

BLM (U.S. Department of the Interior, Bureau of Land Management). 2011. Desert Sunlight Solar Farm Project California Desert Conservation Area Plan Amendment and Final Environmental Impact Statement. Palm Springs–South Coast Field Office. Section 3.15 Transportation and Appendix I. Traffic Study. April. http://www.blm.gov/ca/st/en/fo/palmsprings/Solar_Projects/Desert_Sunlight.html. Accessed September 2011.

_____. 1980. California Desert Conservation Area Plan. 1980, as amended March 1999. http://www.blm.gov/pgdata/etc/medialib/blm/ca/pdf/cdd/cdcaplan.Par.15259.File.dat/CA_Desert_.pdf. Accessed September 2011.

BLM and USFS (Bureau of Land Management and United States Forest Service). 2011. National Integrated Land System, Geocommunicator Internet mapping application. http://www.geocommunicator.gov/GeoComm/index.shtm. Accessed February 8, 2010.

Caltrans (California Department of Transportation). 2010. 2010 Annual Average Daily Traffic, (2010 ADDT). http://traffic-counts.dot.ca.gov/2010all/2010AADT.xlsx. Accessed September 2011.

Eagle Crest Energy Company. 2008. Eagle Mountain Pumped Storage Project Draft License Application, Exhibit E, Volume 1, Public Information. June 2008. http://www.eaglecrestenergy.com/pdfs/Exhibit_E_080616.pdf. Accessed September 2011.

Google Earth. 2011. Google Earth Aerial Photographs. Accessed September 2011.

RCTLMA (County of Riverside Transportation and Land Management Agency). 2003. General Plan Final Program Environmental Impact Report, Volume 1. Riverside County. http://www.rctlma.org/genplan/content/eir/volume1.html#4.16. Accessed October 2011.

Riverside County Planning Department. 2009. County of Riverside Planning Department Staff Report, Plot Plan No. 23577, Applicant: Chuckwalla Valley Associates, Inc. September 2009. http://www.rctlma.org/planning/content/hearings/dh/dh2009/agendas/idh_082009/sr_4.1.pdf. Accessed September 2011.

Riverside County. 2003. County of Riverside General Plan and Desert Center Area Plan. October 2003. http://www.rctlma.org/genplan/general_plan_2008/area_plan_vol_2/Desert_Center_Area_Plan_2008.pdf. Accessed September 2011.

State of California. 2000. California Military Land Use Compatibility Analyst Report. http://sample1.projects.atlas.ca.gov/Calmap8/index.html.

TRB (Transportation Research Board). 2000. Highway Capacity Manual, Washington, D.C. December 2000.

SECTION 3.19 – VISUAL RESOURCES

None

SECTION 3.20 – WATER RESOURCES

AECOM (Architecture, Engineering, Consulting, Operations and Maintenance). 2011. Desert Sunlight Solar Farm Project: Response to Public Comments Regarding Potential Relationship Between Groundwater Pumping Levels and Impacts to the Colorado River. Appendix O – Accounting Surface Technical Memorandum. Prepared for Bureau of Land Management, Palm Springs – South Coast Field Office. January 5. http://www.

blm.gov/pgdata/etc/medialib/blm/ca/pdf/palmsprings/desert_sunlight.Par.92719.File.dat/Desert%20Sunlight%20FEIS%20appendix%20N-O.pdf. Accessed October 19, 2012.

BLM (U.S. Department of the Interior, Bureau of Land Management). 2012. Personal communication from Peter Godfrey, BLM California Desert District, to Aubrey Mescher, Aspen Environmental Group. Transmitted via electronic mail. October 15.

_____. 2011a. Plan Amendment/Final EIS for the Palen Solar Power Project, Volume 1 of 2, Chapter 3: Affected Environment. May. http://www.blm.gov/pgdata/etc/medialib/blm/ca/pdf/palmsprings/Palen_Solar_Power_Project.Par.76983.File.dat/Vol1_Palen%20PA-FEIS_ch3.pdf. Accessed October 4, 2011.

_____. 2011b. Desert Sunlight Solar Farm Project California Desert Conservation Area Plan Amendment and Final Environmental Impact Statement. Palm Springs–South Coast Field Office. April. Volume 1: Executive Summary and Chapters 1 through 3.

_____. 2010. Plan Amendment / Final EIS for the Genesis Solar Energy Project, Volume 1 of 3. August. http://www.blm.gov/pgdata/etc/medialib/blm/ca/pdf/palmsprings/genesis.Par.93917.File.dat/Vol1_Genesis%20PA-FEIS_0cover-ch1-ch2-Intro-PropAction.pdf. Accessed October 19, 2011.

_____. 2001. California Water Rights Fact Sheet. August 15. http://www.blm.gov/nstc/WaterLaws/pdf/California.pdf. Accessed October 19, 2011.

Buddemeier, R. W., and Schloss, J. A. 2000. Groundwater Storage and Flow. November 21. http://www.kgs.ku.edu/HighPlains/atlas/apgengw.htm. Accessed October 4, 2011.

CDPH (California Department of Public Health). 2007. Drinking Water Source Assessment and Protection (DWSAP) Program. http://www.cdph.ca.gov/certlic/drinkingwater/Pages/DWSAP.aspx. Accessed December 8, 2011.

CEC (California Energy Commission). 2009. Application for Certification for the Genesis Solar Energy Project. November 30. http://www.energy.ca.gov/sitingcases/genesis_solar/documents/applicant/2009-12-15_Data_Responses_to_Set_1A_TN-54453.pdf. Accessed October 22, 2011.

Colorado River Basin RWQCB (Regional Water Quality Control Board). 2006a. CWA Section 303(d) List of Water Quality Limited Segments. USEPA Approval Date: June 28, 2007. http://www.swrcb.ca.gov/rwqcb7/water_issues/programs/tmdl/docs/303d/usepa_final_r7_2006_303dlist.pdf. Accessed September 30, 2011.

_____. 2006b. Water Quality Control Plan, Colorado River Basin – Region 7. Includes Amendments Adopted by the Regional Board through June. http://www.swrcb.ca.gov/rwqcb7/publications_forms/publications/docs/basinplan_2006.pdf. Accessed October 15, 2011.

CRBC (Colorado River Board of California: The Resources Agency, State of California). 2003. Lower Colorado Water Supply Project: Questions & Answers. http://www.crb.ca.gov/documents.html. Accessed October 7, 2011.

_____. 2000. California's Colorado River Water Use Plan, DRAFT. May 11. http://www.crb.ca.gov/Calif_Plan%20May%2011%20Draft.pdf. Accessed October 7, 2011.

DWR (California Department of Water Resources). 2011a. Groundwater Glossary. http://www.water.ca.gov/groundwater/groundwater_glossary.cfm. Accessed September 22, 2011.

_____. 2011b. Awareness Floodplain Mapping. Floodplain Boundaries – Riverside County. Desert Center Quadrangle. http://www.water.ca.gov/floodmgmt/lrafmo/fmb/fes/awareness_floodplain_maps/riverside/desert_center.cfm. Accessed December 13, 2011.

_____. 2004a. California's Groundwater Bulletin 118: Hydrologic Region Colorado River, Chuckwalla Valley Groundwater Basin. http://www.water.ca.gov/pubs/groundwater/bulletin_118/basindescriptions/7-5.pdf. Accessed September 22, 2011.

_____. 2004b. California's Groundwater Bulletin 118: Hydrologic Region Colorado River, Pinto Valley Groundwater Basin. http://www.water.ca.gov/pubs/groundwater/bulletin_118/basindescriptions/7-6.pdf. Accessed October 7, 2011.

_____. 2004c. California's Groundwater Bulletin 118: Hydrologic Region Colorado River, Cadiz Valley Groundwater Basin. http://www.water.ca.gov/pubs/groundwater/bulletin_118/basindescriptions/7-6.pdf. Accessed October 7, 2011.

_____. 2004d. California's Groundwater Bulletin 118: Hydrologic Region Colorado River, Orocopia Valley Groundwater Basin. http://www.water.ca.gov/pubs/groundwater/bulletin_118/basindescriptions/7-31.pdf. Accessed October 7, 2011.

_____. 2004e. California's Groundwater Bulletin 118: Hydrologic Region Colorado River, Palo Verde Valley Groundwater Basin. http://www.water.ca.gov/pubs/groundwater/bulletin_118/basindescriptions/7-39.pdf. Accessed October 7, 2011.

_____. 2003. Guidebook for Implementation of Senate Bioll 610 and Senate Bill 221. October 8. http://www.water.ca.gov/pubs/use/sb_610_sb_221_guidebook/guidebook.pdf. Accessed October 4, 2011.

ECE (Eagle Crest Energy). 2008. Eagle Mountain Pumped Storage Project. Pre-Application Document. Volume 1, Public Information. FERC Project No. 12509. January. http://www.eaglemountainenergy.us/pdfs/PAD_080105.pdf. Accessed December 8, 2011.

FEMA (Federal Emergency Management Agency). 2012. Executive Order 11988: Floodplain Management. Summary of Requirements. Last Updated June 15. http://www.fema.gov/environmental-planning-and-historic-preservation-program/executive-order-11988-floodplain-management. Accessed October 19, 2012.

_____. 2011. Definitions of FEMA Flood Zone Designations: Undetermined Risk Areas. http://www.msc.fema.gov/webapp/wcs/stores/servlet/info?storeId=10001&catalogId=10001&langId=-1&content=floodZones&title=FEMA%20Flood%20Zone%20Designations. Accessed September 30, 2011.

_____. 2008. Flood Insurance Rate Map 06065CIND2A, Map Index Sheet 2 of 2: Riverside County and Incorporated Areas, California. Effective Date: August 28. http://www.msc.fema.gov/webapp/wcs/stores/servlet/FemaWelcomeView?storeId=10001&catalogId=10001&langId=-1&userType=G. Accessed September 30, 2011.

FERC (Federal Energy Regulatory Commission). 2010. Draft Environmental Impact Statement for Hydropower License. Eagle Mountain Pumped Storage Hydroelectric Project – FERC

Project No. 13123-002. December. http://www.ferc.gov/industries/hydropower/enviro/eis/2010/12-23-10.asp. Accessed October 16, 2012.

Godfrey, G, Ludwig, N, Salve, R. 2012. Groundwater and Large-Scale Renewable Energy Projects on Federal Land: Chuckwalla Valley Groundwater Basin. Arizona Hydrological Society 2012 Annual Water Symposium. September.

JR Associates. 2009. Geophysical Investigation at the Ford Dry Lake Site Near Blythe in Riverside County, California. August 26. http://www.energy.ca.gov/sitingcases/genesis_solar/documents/applicant/afc/volume_2/Appendix%20D.%20Water%20Resources/D.5%20Geophysical%20Invest/Appendix%20D.5.PDF. Accessed October 4, 2011.

Ludwig, Noel. 2011. Desert Harvest Groundwater Comments. Written communication sent via electronic mail by Noel Ludwig, Hydrologist, California Desert District of the U.S. Bureau of Land Management, to Marisa Mitchell, Project Manager, Aspen Environmental Group. December 6.

NPS (National Park Service, Joshua Tree National Park). 2012. Comments on the Final EIS for the Eagle Mountain Pumped Storage Hydroelectric Project, FERC No. 13123-002; Riverside County, California. Written communication submitted by Willie Taylor, NPS Office of Environmental Policy and Compliance, to Kimberly Bose, Federal Energy Regulatory Commission. February 29.

_____. 2010. Standard Review Form: Draft Environmental Impact Report, Eagle Crest Energy Pumped Storage. October 4.

PHB & Associates, Inc. 2009. Preliminary Flood Plan & Hydrology Analysis for Eagle Mountain Area, California. January 22.

RCFCWCD (Riverside County Flood Control and Water Conservation District). 2011. Floodplain Management: District Floodplain Management. http://rcflood.org/FloodPlain.aspx. Accessed December 13, 2011.

SWRCB (State Water Resources Control Board). 2012. Water Words – Glossary and Definitions. Updated 02/16/11. http://www.swrcb.ca.gov/publications_forms/available_documents/water_words.shtml. Accessed October 15, 2012.

_____. 2010. Eagle Mountain Pumped Storage Project Draft Environmental Impact Report. Volume I. State Clearinghouse No. 2009011010, FERC Project No. 13123. July. http://www.waterboards.ca.gov/waterrights/water_issues/programs/water_quality_cert/docs/eagle_mountain_pumped_ferc13123/2_eagltmtn_deir_vol1_2.pdf. Accessed October 16, 2012.

_____. 2003. Order WRO 2003-0004. February 19. http://www.swrcb.ca.gov/waterrights/board_decisions/adopted_orders/orders/2003/wro2003-04.pdf. Accessed October 15, 2012.

USEPA (U.S. Environmental Protection Agency). 2010. Clean Water Action Section 401 Water Quality Certification: A Water Quality Protection Tool for States and Tribes. http://water.epa.gov/lawsregs/guidance/cwa/upload/CWA_401_Handbook_2010_Interim.pdf. Accessed September 27, 2011.

USGS (U.S. Geological Survey). 2008. Scientific Investigations Report 2008-5113, Version 1.1: Update of the Accounting Surface Along the Lower Colorado River. Prepared in cooperation with the Bureau of Reclamation. Revised 2009. http://pubs.usgs.gov/sir/2008/5113/sir2008-5113_text.pdf. Accessed September 27, 2011.

_____. 2007. Geological Survey Water-Supply Paper 1475-0: Hydrologic and Geologic Reconnaissance of Pinto Basin Joshua Tree National Monument, Riverside County, California. Water Resources: Groundwater. http://www.nps.gov/history/history/online_books/geology/publications/wsp/1475-O/sec2.htm. Accessed October 7, 2011.

_____. 2004. Evaluation of the Geohydrologic Framework, Recharge Estimates, and Ground-Water Flow of the Joshua Tree Area, San Bernardino County, California. Scientific Investigations Report 2004-5267. http://pubs.usgs.gov/sir/2004/5267/sir2004-5267.pdf. Accessed November 28, 2011.

White, Scott. 2011. Email communication from Scott White of Aspen Environmental Group to Aubrey Mescher, Marisa Mitchell, Jennifer Lancaster, and Justin Wood of Aspen Environmental Group. October 21.

SECTION 3.21 – SOLID AND HAZARDOUS WASTES

RCWMD (Riverside County Waste Management Department). 2011a. Managing Waste for a Better Tomorrow. http://www.rivcowm.org/opencms/. Accessed September 29, 2011.

_____. 2011b. Waste Fact Sheet. April. http://www.rivcowm.org/opencms/landfill_info/pdf/FactSheets/70759-HazardousWaste-Business.pdf. Accessed September 29, 2011.

SECTION 3.22 – CDCA PLAN CONFORMANCE

None

SECTION 4.1 – ENVIRONMENTAL CONSEQUENCES INTRODUCTION AND OVERVIEW

BLM (U.S. Department of the Interior, Bureau of Land Management). 2011a. Desert Sunlight Solar Farm Project: California Desert Conservation Plan Amendment and Final Environmental Impact Statement DOI Control No. FES 10-39. April. http://www.blm.gov/ca/st/en/fo/palmsprings/Solar_Projects/Desert_Sunlight.html. Accessed September 2011.

_____. 2011b. Notice of Intent to Prepare a Joint Environmental Impact Statement and Environmental Impact Report for the Proposed McCoy Solar Energy Project and Possible Land Use Plan Amendment, Riverside County, CA. Federal Register Vol. 76, No 167. Monday August 29.

_____. 2011c. BLM First-in-Line Pending Solar Applications: California. Updated August. http://www.blm.gov/pgdata/etc/medialib/blm/ca/pdf/pa/energy/solar.Par.84447.File.dat/BLM%20Solar%20Apps%20and%20Auths.pdf. Accessed September 2011.

CEC (California Energy Commission). 2011a. 2011 Renewable Energy Action Team (REAT) Generation Tracking Projects, California Desert Protection Act of 2011, & Draft Proposed Competitive Renewable Energy Zones: Version 8/24/2011. http://www.energy.ca.gov/33by2020/documents/renewable_projects/REAT_2011_Renewable_Projects_2011-08-24.pdf. Accessed September 2011.

_____. 2011b. Renewable Energy Action Team - Generation Tracking for Renewable Projects: Revised 6/20/2011. http://www.energy.ca.gov/33by2020/documents/renewable_projects/Tracking_Report_for_Renewable_Projects.pdf. Accessed September 2011.

CPUC (California Public Utilities Commission). 2011. California's Renewables Portfolio Standard (RPS) List of Facilities. October.

Riverside County. 2012. Email communication from Tim Kelly of Riverside County to Alex McInturff of Aspen Environmental. July 23.

_____. 2010. Land Development Committee Meeting & Comment Agenda Riverside County Planning Department. http://www.rctlma.org/planning/content/devproc/ldc/ldc2010/indioldc_meeting_102110.pdf. Accessed October 2011.

SECTION 4.2 – AIR RESOURCES

SCAQMD (South Coast Air Quality Management District). 2011a. SCAQMD Air Quality Significance Thresholds. http://www.aqmd.gov/ceqa/handbook/signthres.pdf. Accessed October 2011.

_____. 2011b. SCAQMD Localized Significance Thresholds. http://www.aqmd.gov/ceqa/handbook/signthres.pdf. Accessed October 2011.

_____. 2011c. SCAQMD AQMD Rule Book. http://aqmd.gov/rules/index.html. Accessed October 2011.

_____. 2007. 2007 Air Quality Management Plan. http://aqmd.gov/aqmp/07aqmp/index.html. Accessed October 2011.

_____. 2003. 2003 Air Quality Management Plan. http://aqmd.gov/aqmp/AQMD03AQMP.htm. Accessed October 2011.

SECTION 4.3 – BIOLOGICAL RESOURCES – VEGETATION

BLM (U.S. Department of the Interior, Bureau of Land Management). 2011a. Desert Sunlight Solar Farm Project California Desert Conservation Area Plan Amendment and Final Environmental Impact Statement. Palm Springs–South Coast Field Office. April.

_____. 2011b. Plan Amendment/Final EIS for the Palen Solar Energy Project. Palm Springs – South Coast Field Office. May.

_____. 2007. Record of Decision – Final Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement. U.S. Department of the Interior. September 20. http://www.blm.gov/wo/st/en/prog/more/veg_eis.html. Accessed October 31, 2011.

BLM and CDFG (Bureau of Land Management and California Department of Fish and Game). 2002. Proposed Northern & Eastern Colorado Desert Coordinated Management Plan and Final Environmental Impact Statement. Prepared by the BLM California Desert District Office and the CDFG Inland, Desert and Eastern Sierra Region. July.

Boarman, W. I. 2002. Threats to desert tortoise populations: A critical review of the literature. U.S. Geological Survey, Western Ecological Research Center, Sacramento, California.

Brooks, M. L., and B. Lair. 2005. Ecological effects of vehicular routes in a desert ecosystem. Report prepared for the United States Geological Survey, Recoverability and Vulnerability of Desert Ecosystems Program. http://geography.wr.usgs.gov/mojave/rvde. March 2.

DOE and BLM (Department of Energy and the Bureau of Land Management). 2012. Final Programmatic Environmental Impact Statement for Solar Energy Development in Six Southwestern States. DES 10-59. DOE/EIS-0403. December.

DOE and BLM. 2011. Supplement to the Draft Programmatic Environmental Impact Statement for Solar Energy Development in Six Southwestern States. DES 11-49. DOE/EIS-0403D-S. October.

Gibson, A. C., M. R. Sharifi and P. W. Rundel. 2004. Resprout characteristics of creosote bush (*Larrea tridentata*) when subjected to repeated vehicle damage. Journal of Arid Environments 57: 411-429.

Jackson, L. L., and P. W. Comus. 1999. Ecological consequences of agricultural development in a Sonoran Desert valley. Pages 215-254 in R. H. Robichaux (ed.). Ecology of Sonoran Desert Plants and Plant Communities. University of Arizona Press, Tucson.

Jennings, W. B. 1997. Habitat use and food preferences of the desert tortoise, Gopherus agassizii, in the western Mojave Desert and impacts of off-road vehicles. Proceedings: Conservation, Restoration, and Management of Tortoises and Turtles – An International Conference. pp. 42-45.

Lovich, J. E., and D. Bainbridge. 1999. Anthropogenic Degradation of the Southern California Desert Ecosystem and Prospects for Natural Recovery and Restoration. Environmental Management Vol. 24, No. 3, pp. 309–326.

Newton, G. A., and V. P. Claassen. 2003. Rehabilitation of Disturbed Lands in California: A Manual for Decision-Making. California Department of Conservation, California Geological Survey. 228 p.

NISC (National Invasive Species Council). 2008. 2008-2012 National Invasive Species Management Plan. 35 pp. August 1.

Okin, G. S., B. Murray, and W. H. Schlesinger. 2001. "Degradation of sandy arid shrubland environments: observations, process modeling, and management implications." Journal of Arid Environments. 47:123-144.

Sharifi, M. R., A. C. Gibson, and P. W. Rundel. 1997. "Surface dust impacts on gas exchange in Mojave Desert shrubs." Journal of Applied Ecology. 34 (4): 837-846.

Western et al. (Western Area Power Administration, California Energy Commission, and Bureau of Land Management). 2010. Draft Environmental Impact Statement/Staff Assessment for the Solar Reserve LLC Rice Solar Energy Project, Riverside County, California (DOE/EIS-0439). October.

SECTION 4.4 – BIOLOGICAL RESOURCES – WILDLIFE

APLIC (Avian Power Line Interaction Committee). 2006. Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006. Edison Electric Institute, APLIC, and the California Energy Commission. Washington, D.C., and Sacramento, CA. 207 pp.

Avery, M. L., P. F. Spring, and N. S. Dailey. 1978. Avian mortality at man-made structures: an annotated bibliography. U.S. Fish and Wildlife Service, Biological Services Program, National Power Plant Team. FWS/OBS-75/58. 108 pp.

Bertolero, A., D. Oro, and A. Besnard. 2007. Assessing the efficacy of reintroduction programmes by modeling adult survival: the example of Hermann's tortoise. Animal Conservation 10:360–368.

BLM (U.S. Department of the Interior, Bureau of Land Management). 2011. Desert Sunlight Solar Farm Project California Desert Conservation Area Plan Amendment and Final Environmental Impact Statement. Palm Springs–South Coast Field Office. April.

BLM and CDFG (Bureau of Land Management and California Department of Fish and Game). 2002. Proposed Northern & Eastern Colorado Desert Coordinated Management Plan and Final Environmental Impact Statement. Prepared by the BLM California Desert District Office and the CDFG Inland, Desert and Eastern Sierra Region. July.

Boarman, W. I. 2003. Managing a Subsidized Predator Population: Reducing Common Raven Predation on Desert Tortoises. *Environmental Management* V32:2 p. 205-217.

_____. 2002. Threats to desert tortoise populations: A critical review of the literature. U.S. Geological Survey, Western Ecological Research Center, Sacramento, California.

Boarman, W. I., M. A. Patten, R. J. Camp, and S. J. Collis. 2006. Ecology of a population of subsidized predators: Common ravens in the central Mojave Desert, California. Journal of Arid Environments. 67 (2006) 248-261.

CBOC (California Burrowing Owl Consortium). 1993. Burrowing Owl Survey Protocol and Mitigation Guidelines. Alviso, CA 13 pp.

CDFG (California Department of Fish & Game). 1995. Staff Report on Burrowing Owl Mitigation. Memorandum dated October 17, 1995.

Dooling, R. J., and A. N. Popper. 2007. The effects of highway noise on birds. Prepared for the California Department of Transportation, Division of Environmental Analysis. September 30.

DTRO (Desert Tortoise Recovery Office, U.S. Fish and Wildlife Service). 2009. Science Advisory Committee Meeting Summary, March 13, 2009. http://www.fws.gov/nevada/desert_tortoise/documents/sac/20090313_SAC_meeting_summary.pdf. Accessed November 4, 2011.

Esque, T. C., K. E. Nussear, K. K. Drake, A. D. Walde, K. H. Berry, R. C. Averill-Murray, A. P. Woodman, W. I. Boarman, P. A. Medica, J. Mack, and J. S. Heaton. 2010. Effects of subsidized predators, resource variability, and human population density on desert tortoise populations in the Mojave Desert, USA. Endangered Species Research 12: 167-177.

Field, K. J., C. R. Tracy, P. A. Medica, R. W. Marlow, and P. S. Corn. 2007. Return to the wild: Translocation as a tool in conservation of the desert tortoise (*Gopherus agassizii*). Biological Conservation 136:232–245.

Germano, J. M., and P. J. Bishop. 2009. Suitability of amphibians and reptiles for translocation. Conservation Biology. 23(1): 7-15.

Horvath, G., G. Kriska, P. Malik, and B. Robertson. 2009. Polarized light pollution: a new kind of ecological photopollution. Front Ecol Environ. 7(6): 317-325.

LaPre, L. F. 2012. Personal communication between Scott White of Aspen Environmental Group and Larry LaPre of BLM. May 30.

Martin, T. E., and G. R. Geupel. 1993. Nest monitoring plots: methods for locating nests and monitoring success. J. Field Ornithology 64: 507-519.

McCrary, M. D., R. L. McKernan, R. W. Schreiber, W. D. Wagner and T. C. Sciarrotta. 1986. Avian Mortality at a Solar Energy Power Plant. Journal of Field Ornithology. Vol. 57, No. 2, pp. 135-141.

Nussear, K. E., T. C. Esque, R. D. Inman, Leila Gass, K. A. Thomas, C. S. A. Wallace, J. B. Blainey, D. M. Miller, and R. H. Webb. 2009. Modeling habitat of the desert tortoise (*Gopherus agassizii*) in the Mojave and parts of the Sonoran Deserts of California, Nevada, Utah, and Arizona: U.S. Geological Survey Open-File Report 2009-1102, 18 p.

Pagel, J. E., D. M. Whittington, and G. T. Allen. 2010. Interim golden eagle technical guidance: inventory and monitoring protocols; and other recommendations in support of eagle management and permit issuance. Division of Migratory Bird management, US Fish and Wildlife Service, Arlington Virginia. 26 pp.

Rittenhouse, C. D., J. J. Millspaugh, M. W. Hubbard, and S. L. Sheriff. 2007. Movements of translocated and resident three-toed box turtles. Journal of Herpetology. 41:115–121.

USACE and CDFG (United States Army Corps of Engineers and California Department of Fish and Game). 2009. Newhall Ranch Resource Management and Development Plan and Spineflower Conservation Plan Joint Environmental Impact Statement and Environmental Impact Report. SCH No. 2000011025. http://www.dfg.ca.gov/regions/5/newhall/docs/.

USFWS (United States Fish and Wildlife Service). 2011a. Revised Recovery Plan for the Mojave Population of the Desert Tortoise (*Gopherus agassizii*). U.S. Fish and Wildlife Service, Region 8, Pacific Southwest Region, Sacramento, California. May 6.

_____. 2011b. Biological Opinion on the Desert Sunlight Solar Farm Project, Riverside County, California (CACA 48649). Carlsbad Fish and Wildlife Office, Carlsbad, California. July.

_____. 2010a. Preparing for Any Action That May Occur within the Range of the Mojave Desert Tortoise (*Gopherus agassizii*). 2010 Field Season. Unpublished Report, Ventura Fish and Wildlife Office, Ventura, California. 18 pp.

_____. 2010b. Translocation of Desert Tortoises (Mojave Population) From Project Sites: Plan Development Guidance. Unpublished Report, August 2010, Ventura Fish and Wildlife Office, Ventura, California. 11 pp.

_____. 2010c. Region 8 Interim Guidelines for the Development of a Project-Specific Avian and Bat Protection Plan for Solar Energy Plants and Related Transmission Facilities. Pacific Southwest Region. 23 pp.

_____. 2009. Desert Tortoise Field Manual. http://www.fws.gov/ventura/species_information/protocols_guidelines/

Zouhar, K., J. K. Smith, S. Sutherland, and M. L. Brooks. 2008. Wildland Fire in Ecosystems: Fire and Nonnative Invasive Plants. General Technical Report RMRSGTR-42-Vol. 6, USDA Forest Service Rocky Mountain Research Station, Ogden, Utah: 355 pp.

SECTION 4.5 – CLIMATE CHANGE

SCAQMD (South Coast Air Quality Management District). 2008. BOARD MEETING DATE: December 5, 2008 AGENDA NO. 31 - Interim CEQA GHG Significance Threshold for Stationary Sources, Rules and Plans. http://www.aqmd.gov/hb/2008/December/081231a.htm. Accessed October 2011.

USEPA (United States Environmental Protection Agency). 2011. How clean is the electricity I use? – Power Profiler. http://www.epa.gov/cleanenergy/energy-and-you/how-clean.html.

Wohlfahrt, Georg, et al. 2008. Large Annual Net Ecosystem CO_2 Uptake at a Mojave Desert Ecosystem. EGU 2008, April 15, 2008, Vienna.

SECTION 4.6 – CULTURAL RESOURCES

Akyuz, Linda. 2012. DRAFT – A BLM Class III Cultural Resources Inventory for the Desert Harvest Solar Farm Project and Three Gen-Tie Alternatives Desert Center Vicinity, Riverside County, California. Prepared by Chambers Group. Prepared for the Bureau of Land Management.

Bean, Lowell John, and James Toenjes. 2010. Native American Ethnographic Resources Report for the Proposed Blythe, Palen And Genesis Solar Power Projects, Riverside County, California. Prepared for California Energy Commission, Sacramento, California. Prepared under contract with Environmental Science Associates (ESA).

Bischoff, Matt C. 2000. The Desert Training Center/California-Arizona Maneuver Area, 1942-1944: Historical and Archaeological Contexts. Statistical Research, Inc., Tucson, Arizona.

Bischoff, Matt, and Scott Baxter. 2010. Documenting the Desert Training Center and California-Arizona Maneuver Area Cultural Landscape-DRAFT. Prepared by Past Forward, Inc. Prepared for the California Energy Commission.

Chandler, Evelyn, Robert Cunningham, Elizabeth Denniston, Cary Cotterman, William Sharp, and Roger Mason. 2010b. Cultural Resources Evaluation of 57 Resources for the Desert Sunlight Solar Farm Project Desert Center Vicinity, Riverside County, California. ECORP, Redlands.

Chandler, Evelyn, Robert Cunningham, Elizabeth Denniston, Jennifer Howard, Melanie Knypstra, and Stephen Pappas. 2010a. Class III Cultural Resources Inventory of the Desert Sunlight Solar Farm Project: Desert Center Vicinity, Riverside County, California, Final Draft. Submitted to: U.S. Department of the Interior, Bureau of Land Management Renewable Energy Coordinating Office, Palm Springs, CA. Submitted by:ECORP Consulting, Inc., Redlands, CA.

Goldberg, Susan and Dennis McDougall. 2012. DRAFT – Third Party Review of Archaeological and Built Environment Reports by Chambers Group For Desert Harvest Solar Farm Project, Desert Center Vicinity, Riverside County, California. Applied Earthworks, Hemet.

Laylander, Don and Jerry Schaefer. 2010. Draft Chuckwalla Valley Prehistoric Trails Network Cultural Landscape: Historic Context, Research Questions, and Resource Evaluation Criteria. Prepared for California Energy Commission, Sacramento, California. Prepared by ASM Affiliates, Inc., Carlsbad, California, under contract with Aspen Environmental Group, Agoura Hills, California. With a contribution by Lowell John Bean and James Toenjes.

SECTION 4.7 – PALEONTOLOGICAL RESOURCES

Aron, G., and J. Kelly. 2011. Confidential Paleontological Survey Report: Desert Sunlight Solar Farm Project. Prepared of First Solar, Inc., Oakland, California and ECORP Consulting, Inc., Redlands California, prepared by Paleo Solutions, Costa Mesa, California.

Roeder, M. A. Paleontological. 2012. DRAFT – A BLM Paleontological Resources Assessment, Desert Harvest Solar Project and Gen-Tie Line, Desert Center, Riverside County, California. Prepared for Bureau of Land Management, Palm Springs Field Office and enXco Development Corporation, San Ramon, California prepared by Chambers Group, Inc., Redlands, California.

_____. 2011. Records Search and Potential Fossil Yield Classification, Desert Harvest Solar Project and Gen-Tie Line, Desert Center, Riverside County, California. Prepared for Bureau of Land Management, Palm Springs Field Office and enXco Development Corporation, San Ramon, California prepared by Chambers Group, Inc., Redlands, California.

SECTION 4.8 – FIRE AND FUELS MANAGEMENT

None

SECTION 4.9 – SOILS

BLM (U.S. Department of the Interior, Bureau of Land Management). 2011. Desert Sunlight Solar Farm Project California Desert Conservation Area Plan Amendment and Final Environmental Impact Statement. Palm Springs–South Coast Field Office. http://www.blm.gov/ca/st/en/fo/palmsprings/Solar_Projects/Desert_Sunlight.html. Accessed October 22, 2011.

Riverside County. 2003. County of Riverside General Plan and Desert Center Area Plan. October 2003.

SECTION 4.10 – ENERGY AND MINERAL RESOURCES

BLM (U.S. Department of the Interior, Bureau of Land Management). 2010. Solar Energy Development Draft Programmatic Environmental Impact Statement. Chapter 5: Impacts of Solar Energy Development and Potential Mitigation Measures. http://solareis.anl.gov/documents/dpeis/Solar_DPEIS_Chapter_5.pdf. Accessed October 12, 2011.

Federal Register. 2011. Rules and Regulations. Volume 76, Number 80. Tuesday, April 26.

SECTION 4.11 – LANDS AND REALTY

California Department of Conservation, Division of Land Resource Protection. 2006. Riverside County Williamson Act Lands 2007. ftp://ftp.conservation.ca.gov/pub/Dlrp/WA/Map%20and%20PDF/Riverside/RiversideWA_07_08.pdf. Accessed October 19, 2011.

Riverside County. 2009. Riverside County Zoning Ordinance (Ordinance 348), Amended through Ordinance No. 348.4647. http://www.tlma.co.riverside.ca.us/planning/content/zoning/ordnance/ord348_toc.html#zones. Accessed October 22, 2011.

_____. 2003. County of Riverside General Plan and Desert Center Area Plan. October 2003.

SWRCB (State Water Resources Control Board). 2010. Eagle Mountain Pumped Storage Project Draft EIR. http://www.swrcb.ca.gov/waterrights/water_issues/programs/water_quality_cert/docs/eagle_mountain_pumped_ferc13123/2_eagltmtn_deir_vol1_2.pdf. Accessed October 28, 2011.

SECTION 4.12 – NOISE AND VIBRATION

BLM (U.S. Department of the Interior, Bureau of Land Management). 2011. Desert Sunlight Solar Farm Project California Desert Conservation Area Plan Amendment and Final Environmental Impact Statement for the Palm Springs – South Coast Field Office, Palm Springs, California. CACA #48649. April.

CEQANet. 2012. Search for "Silverado" in State Clearinghouse CEQA database. http://www.ceqanet.ca.gov/ProjectList.asp. Accessed August 7.

FICUN (Federal Interagency Committee on Urban Noise). 1980. Guidelines for Considering Noise in Land Use Planning and Control. Washington, DC. http://www.wyle.com/ServicesSolutions/science/EMMA/AcousticandVibrationConsulting/Resources/DocumentLibrary/NoiseGuidance/Pages/ficun.aspx. Accessed September 26, 2011.

First Solar. 2011. "First Solar Sells 550-Megawatt Desert Sunlight Solar Farm, Among World's Largest". September 30. http://investor.firstsolar.com/releasedetail.cfm?ReleaseID=610018. Accessed October 4, 2011.

Hernandez, Kroone & Associates. 2012. Traffic Study for Desert Harvest Solar Project, Desert Center, California. Prepared for Aspen Environmental Group. January. [see Appendix H].

Riverside County. 2004. Riverside County Airport Land Use Compatibility Plan. Volume 1. Policy Document. October 14. http://www.rcaluc.org/plan_new.asp.

_____. 2003. County of Riverside General Plan, Chapter 7: Noise Element. October 2003. http://www.tlma.co.riverside.ca.us/genplan/content/gp/chapter07.html. Accessed September 26, 2011.

_____. 19, . http://www.clerkoftheboard.co.riverside.ca.us/ords/800/847.pdf. Accessed September 26, 2011.

USEPA (United States Environmental Protection Agency). 1974. Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety. (EPA 550/9-74-004.) U.S. Government Printing Office. Washington, DC. http://www.nonoise.org/library/levels74/levels74.htm. Accessed September 26, 2011.

SECTION 4.13 – PUBLIC HEALTH AND SAFETY

Baker, Scott. 2011. Captain of Lake Tamarisk Fire Department. Personal communication with Amy Morris from Aspen Environmental Group. November 1, 2011.

BLM (U.S. Department of the Interior, Bureau of Land Management). 2011. Final EIS/EIR for the Desert Sunlight Solar Farm Project. Section 3.11 Public Health and Safety and Appendix J Phase I Environmental Site Assessment Report. April. http://www.blm.gov/ca/st/en/fo/palmsprings/Solar_Projects/Desert_Sunlight.html. Accessed October 2011.

First Solar. 2009. Independent Studies. http://www.firstsolar.com/en/CdTe.php. Accessed October 2011.

Fthenakis, V., and K. Zweibel. 2003. CdTe PV: Real and Perceived EHS Risks. Presented at the 2003 NCPV Meeting.

Lange, N. 1973. *Handbook of Chemistry*. McGraw Hill.

Riverside County. 2006. Riverside County Operational Area. Emergency Operations Plan. http://www.rvcfire.org/opencms/functions/oes/EmergencyManagement/PlansandPublications/RIVERSIDE_COUNTY_OPERATIONAL_AREA_EMERGENCY_OPERATIONS_PLAN_xEOPx.html. Accessed October 31, 2011.

_____. 2003. County of Riverside General Plan and Desert Center Area Plan. October 2003. http://www.rctlma.org/genplan/general_plan_2008/area_plan_vol_2/Desert_Center_Area_Plan_2008.pdf. Accessed October 2011.

Zayed, P., and S. Philippe. 2009. Acute Oral and Inhalation Toxicities in Rats with Cadmium Telluride. International Journal of Toxicology. Vol. 28, No. 4, 259-265. http://ijt.sagepub.com/content/28/4/259.abstract. Accessed October 2011.

SECTION 4.14 – RECREATION

BLM (U.S. Department of the Interior, Bureau of Land Management). 2010. Desert Sunlight Solar Farm Project California Desert Conservation Area Plan Amendment and Final Environmental Impact Statement. http://www.blm.gov/ca/st/en/fo/palmsprings/Solar_Projects/Desert_Sunlight.html. Accessed October 22, 2011.

SECTION 4.15 – SOCIAL AND ECONOMIC SETTING

BEA (Bureau of Economic Analysis). 2011. CA25N Total Full-time and Part-time Employment by NAICS Industry. http://www.bea.gov/iTable/iTable.cfm?reqid=70&step=1&isuri=1&acrdn=5. Accessed on Oct. 19, 2011.

BLM (U.S. Department of the Interior, Bureau of Land Management). 2010. Blythe Solar Power Project Final Environmental Impact Statement. August 2010.

_____. 2010. Desert Sunlight Solar Farm Project California Desert Conservation Area Plan Amendment and Final Environmental Impact Statement. http://www.blm.gov/ca/st/en/fo/palmsprings/Solar_Projects/Desert_Sunlight.html. Accessed October 22, 2011.

CAEDD (California Employment Development Department). 2011. Riverside-San Bernardino-Ontario Metropolitan Statistical Area (Riverside County). http://www.calmis.ca.gov/file/lfmonth/rive$pds.pdf. Accessed Oct. 24, 2011.

Hoen, Ben, Ryan Wiser, Peter Cappers, Mark Thayer, Gautam Sethi. 2009. "The Impact of Wind Power Projects on Residential Property Values in the United States: A Multi-Site Hedonic Analysis." Ernest Orlando Lawrence Berkeley National Laboratory, Environmental Energy Technologies Division. http://eetd.lbl.gov/ea/ems/reports/lbnl-2829e.pdf. Accessed Oct. 24, 2011.

Kinnard, William N., Jr., and Sue Ann Dickey. 1995. "A Primer on Proximity Impact Research: Residential Property." Real Estate Issues. April.

McCann, Richard. 1999. "A Review of the Literature on Property Value Impacts from Industrial Activities." M. Cubed (Working Paper). October.

Metz, William C., Tim Allison, David E. Clark. 1997. "Does Utility Spent Nuclear Fuel Storage Affect Local Property Values?" Radwaste. May.

Office of Energy Efficiency and Renewable Energy and Bureau of Land Management. 2010. Solar Energy Development Programmatic Environmental Impact Statement (PEIS). http://solareis.anl.gov/maps/alternatives/index.cfm. Accessed Oct. 19, 2011.

Sterzinger, George, Fredrick Beck, Damian Kostiuk. 2003. "The Effect of Wind Development on Local Property Values." Renewable Energy Policy Project, Analytical Report. May. http://www.repp.org/articles/static/1/binaries/wind_online_final.pdf. Accessed Oct. 24, 2011.

SECTION 4.16 – ENVIRONMENTAL JUSTICE

U.S. Census Bureau. 2010. Race, Combinations of Two Races, and Not Hispanic or Latino: 2010 in Blocks 1400 through 1499 and Block 1851 in Block Group 1 Census Tract 469. 2010 Summary File 1. http://factfinder2.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t. Accessed October 13, 2011.

SECTION 4.17 – SPECIAL DESIGNATIONS

Jette, C., A. Blotkamp, Y. Le, S. J. Hollenhorst. 2011. Joshua Tree National Park: Winter 2010. National Park Service, Fort Collins, Colorado.

SECTION 4.18 – TRANSPORTATION AND PUBLIC ACCESS

None

SECTION 4.19 – VISUAL RESOURCES

BLM (U.S. Department of the Interior, Bureau of Land Management). 1986a. *Visual Resource Inventory Manual H-8410-1*.

_____. 1986b. Visual Resource Contrast Rating Manual 8431.

_____. 1984. Visual Resource Management Manual 8400.

SECTION 4.20 – WATER RESOURCES

AECOM. 2010. Desert Sunlight Solar Farm Project, Final Environmental Impact Statement, Appendix G: Water Resources Studies. April 9. http://www.blm.gov/pgdata/etc/medialib/blm/ca/pdf/palmsprings/desert_sunlight.Par.70462.File.dat/Desert%20Sunlight%20FEIS%20appendix%20G.pdf. Accessed October 18, 2011.

CASQA (California Stormwater Quality Association). 2003. California Stormwater BMP Handbook – Construction. NS-2: Dewatering Operations. http://www.cabmphandbooks.com/Documents/Construction/NS-2.pdf. Accessed October 22, 2012.

CEC (California Energy Commission). 2010. Genesis Solar Energy Project: Revised Staff Assessment. June 11. http://www.energy.ca.gov/2010publications/CEC-700-2010-006/CEC-700-2010-006-REV.PDF. Accessed October 22, 2011.

_____. 2009. Application for Certification for the Genesis Solar Energy Project. November 30. http://www.energy.ca.gov/sitingcases/genesis_solar/documents/applicant/2009-12-15_Data_Responses_to_Set_1A_TN-54453.pdf. Accessed October 22, 2011.

CPUC (California Public Utilities Commission). 2011. Supplemental Draft Environmental Impact Report: Devers-Palo Verde No. 2 Transmission Line Project, Colorado River Substation Expansion. Section D, Environmental Analysis. http://www.cpuc.ca.gov/environment/info/aspen/dpv2/sdeir/d_envanalysis.pdf. Accessed December 9, 2011.

CRBC (Colorado River Board of California: The Resources Agency, State of California). 2003. Lower Colorado Water Supply Project: Questions & Answers. http://www.crb.ca.gov/documents.html. Accessed October 7, 2011.

_____. 2000. California's Colorado River Water Use Plan, DRAFT. May 11. http://www.crb.ca.gov/Calif_Plan%20May%2011%20Draft.pdf. Accessed October 7, 2011.

DWR (California Department of Water Resources). 2004a. California's Groundwater Bulletin 118: Hydrologic Region Colorado River, Chuckwalla Valley Groundwater Basin. http://www.water.ca.gov/pubs/groundwater/bulletin_118/basindescriptions/7-5.pdf. Accessed November 9, 2011.

enXco. 2011a. Desert Harvest Solar Plan of Development. October 28.

PHB & Associates, Inc. 2009. Preliminary Flood Plan & Hydrology Analysis for Eagle Mountain Area, California. January 22.

UBC (Uniform Building Code). 1997. Volume 2, Chapter 16: Structural Design Requirements.

WorleyParsons. 2009. Technical Memorandum – Groundwater Resources Cumulative Impact Analysis for Genesis Solar Power Project, Riverside County, CA. December 31. http://www.energy.ca.gov/sitingcases/genesis_solar/documents/applicant/2009-12-31_Cumulative_Impact_Analysis_TN-54673.pdf. Accessed October 4, 2011.

SECTION 4.21 – SOLID AND HAZARDOUS WASTES

RCWMD (Riverside County Waste Management Department). 2011. Managing Waste for a Better Tomorrow. http://www.rivcowm.org/opencms/. Accessed September 29, 2011.

SECTION 4.22 – IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

None

SECTION 4.23 – SHORT-TERM VERSUS LONG-TERM PRODUCTIVITY OF THE ENVIRONMENT

None

SECTION 4.24 – SUMMARY OF UNAVOIDABLE IMPACTS

None

SECTION 5 – CONSULTATION, COORDINATION, AND PUBLIC PARTICIPATION

None.

APPENDIX M – RESPONSE TO COMMENTS

National Research Council. 2008. *Severe Space Weather Events — Understanding Societal and Economic Impacts: A Workshop Report.* Washington D.C.

CHAPTER 8 – GLOSSARY AND LIST OF ACRONYMS

GLOSSARY

Air Basin. A regional area defined for state air quality management purposes based on considerations that include topographic features that influence meteorology and pollutant transport patterns, and political jurisdiction boundaries that influence the design and implementation of air quality management programs.

Air Quality Control Region. A regional area defined for federal air quality management purposes based on considerations that include topographic features that influence meteorology and pollutant transport patterns, and political jurisdiction boundaries that influence the design and implementation of air quality management programs.

Alluvial Fan. Fan shaped landform consisting of water deposited material.

Ambient Air Quality Standards. A combination of air pollutant concentrations, exposure durations, and exposure frequencies that are established as thresholds above which adverse impacts to public health and welfare may be expected. Ambient air quality standards are set on a national level by the U.S. Environmental Protection Agency. Ambient air quality standards are set on a state level by public health or environmental protection agencies as authorized by state law.

Ambient Air. Outdoor air in locations accessible to the general public.

Area of Critical Concern (ACEC). An area within the public lands where special management attention is required (when such areas are developed or used or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes, or to protect life and safety from natural hazards.

Attainment Area. An area that has air quality as good as or better than a national or state ambient air quality standard. A single geographic area may be an attainment area for one pollutant and a non-attainment area for others.

A-Weighted Decibel (dBA). A frequency-weighted decibel scale that approximates the relative sensitivity of human hearing to different frequency bands of audible sound.

Cancer. A class of diseases characterized by uncontrolled growth of somatic cells. Cancers are typically caused by one of three mechanisms: chemically induced mutations or other changes to cellular DNA; radiation induced damage to cellular chromosomes; or viral infections that introduce new DNA into cells.

Carbon Monoxide (CO). A colorless, odorless gas that is toxic because it reduces the oxygen-carrying capacity of the blood.

Carcinogen. A chemical substance or type of radiation that can cause cancer in living organisms.

Clean Water Act (CWA). Provides requirements for the restoration and maintenance of the chemical, physical, and biological integrity of the nation's waters.

Climate. A statistical description of daily, seasonal, or annual weather conditions based on recent or long-term weather data. Climate descriptions typically emphasize average, maximum,

and minimum conditions for temperature, precipitation, humidity, wind, cloud cover, and sunlight intensity patterns; statistics on the frequency and intensity of tornado, hurricane, or other severe storm events may also be included.

Community Noise Equivalent Level (CNEL). A 24-hour average noise level rating with a 5 dB penalty factor applied to evening noise levels and a 10 dB penalty factor applied to nighttime noise levels. The CNEL value is very similar to the Day-Night Average Sound Level (Ldn) value, but includes an additional weighting factor for noise during evening hours.

Criteria Pollutant. An air pollutant for which there is a national ambient air quality standard (carbon monoxide, nitrogen dioxide, ozone, sulfur dioxide, inhalable particulate matter, fine particulate matter, or airborne lead particles).

Critical Habitat. Habitat designated by the U.S. Fish and Wildlife Service under Section 4 of the Endangered Species Act and under the following criteria: 1) specific areas within the geographical area occupied by the species at the time it is listed, on which are found those physical or biological features essential to the conservation of the species and that may require special management of protection; or 2) specific areas outside the geographical area by the species at the time it is listed but that are considered essential to the conservation of the species.

Cultural Resources. Locations of human activity, occupation, use, or those of importance to a group. They include expressions of human culture and history in the physical environment, such as archaeological sites, buildings, structures, objects, districts, or other places.

C-Weighted Decibel (dBC). A frequency-weighted decibel scale that correlates well with the physical vibration response of buildings and other structures to airborne sound.

Day-Night Average Sound Level (Ldn). A 24-hour average noise level rating with a 10 dB penalty factor applied to nighttime noise levels. The Ldn value is very similar to the CNEL value, but does not include any weighting factor for noise during evening hours.

De Minimis Level. A threshold for determining whether various regulatory requirements apply to a particular action or facility. In an air quality context, de minimis thresholds typically are based on emissions, facility size, facility activity levels, or other indicators.

Decibel (dB). A generic term for measurement units based on the logarithm of the ratio between a measured value and a reference value. Decibel scales are most commonly associated with acoustics (using air pressure fluctuation data); but decibel scales sometimes are used for ground-borne vibrations or various electronic signal measurements.

Desert Pavement. A surface covering of closely packed rock fragments of pebble or cobble size found on desert soils.

Desert Wildlife Management Area (DWMA): areas established in the NECO Plan to address the recovery of the desert tortoise. They are intended to be areas where viable desert tortoise populations can be maintained (Category I habitat).

Equivalent Average Sound Pressure Level (Leq). The decibel level of a constant noise source that would have the same total acoustical energy over the same time interval as the actual time-varying noise condition being measured or estimated. Leq values must be associated with an explicit or implicit averaging time in order to have practical meaning.

Ethnohistoric Resources. Areas used by Native Americans following exploration and settlement by non-Native Americans. Sites or artifacts of particular significance to modern Native Americans are often kept secret by those groups to protect the sites from disturbance, looting, overuse, or other defamations.

Fossorial. Adapted to digging and life underground.

Geomorphic Setting. Resembling the earth or its shape or configuration of the earth's surface.

Greenhouse Gas. A gaseous compound that absorbs infrared radiation and re-radiates a portion of that back toward the earth's surface, thus trapping heat and warming the earth's atmosphere.

Groundwater Protection Areas and Wellhead Protection. The overall concept behind wellhead protection is to develop a reasonable distance between point sources of pollution and public drinking water wells so that releases from point sources are unlikely to impact groundwater from the well. The California Department of Public Health established the Drinking Water Source Assessment and Protection Program, which guides local agencies in protecting surface water and groundwater that are sources of drinking water.

Habitat. A specific set of physical conditions that surround a single species, a group of species, or a large community. In wildlife management, the major components of habitat are considered to be food, water, cover, and living space.

Hazardous Air Pollutant (HAP). Air pollutants that have been specifically designated by relevant federal or state authorities as being hazardous to human health. Most HAP compounds are designated due to concerns related to: carcinogenic, mutagenic, or teratogenic properties; severe acute toxic effects; or ionizing radiation released during radioactive decay processes.

Hertz (Hz). A standard unit for describing acoustical frequencies measured as the number of air pressure fluctuation cycles per second. For most people, the audible range of acoustical frequencies is from 20 Hz to 20,000 Hz.

Invasive Species. An exotic species whose introduction does or is likely to cause economic or environmental harm or harm to human health (Executive Order 13122, 2/3/99).

Isolate. Non-linear, isolated archaeological features without associated artifacts.

Maintenance Area. An area that currently meets federal ambient air quality standards but which was previously designated as a nonattainment area. Federal agency actions occurring in a maintenance area are still subject to Clean Air Act conformity review requirements.

Maximum Sound Pressure Level (Lmax). The highest decibel level measured during a stated or implied monitoring period or noise event. The Lmax value recorded by a sound level meter depends on the time factor used for integration of instantaneous sound pressure level measurements. For most modern sound meters, this is 1 second when the instrument is set for the slow sampling rate and 1/8 second when the instrument is set for the fast sampling rate

Memorandum of Understanding. A formal document describing an agreement between parties.

Mutagen. A chemical substance or physical agent that causes a permanent change to the genetic material of a cell.

National Flood Insurance Program (NFIP). The NFIP is a federal program enabling property owners in participating communities to purchase insurance protection against losses from flooding. In support of the NFIP, FEMA identifies flood hazard areas throughout the U.S. and its territories by producing flood hazard boundary maps, flood insurance rate maps, and flood boundary and floodway maps.

National Pollutant Discharge Elimination System (NPDES). The NPDES permit program has been delegated in California to the State Water Resources Control Board. These sections of the CWA require that an applicant for a federal license or permit that allows activities resulting in a discharge to waters of the United States must obtain a State certification that the discharge complies with other provisions of the Clean Water Act.

National Register of Historic Places (NRHP). Administered by the U.S. National Parks Department, the NRHP is part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect America's historic and archeological resources.

Nationwide Programmatic Agreement (PA). A document that details the terms of a formal, legally binding agreement between one party and other state and/or federal agencies. A PA establishes a process for consultation, review, and compliance with one or more federal laws, most often with those federal laws concerning historic preservation.

Native Americans. Indigenous peoples of the western hemisphere.

Nitric Oxide (NO). A colorless toxic gas formed primarily by combustion processes that oxidize atmospheric nitrogen gas or nitrogen compounds found in the fuel. A precursor of ozone, nitrogen dioxide, numerous types of photochemically generated nitrate particles (including PAN), and atmospheric nitrous and nitric acids. Most nitric oxide formed by combustion processes is converted into nitrogen dioxide by subsequent oxidation in the atmosphere over a period that may range from several hours to a few days.

Nitrogen Dioxide (NO2). A toxic reddish gas formed by oxidation of nitric oxide. Nitrogen dioxide is a strong respiratory and eye irritant. Most nitric oxide formed by combustion processes is converted into nitrogen dioxide by subsequent oxidation in the atmosphere. Nitrogen dioxide is a criteria pollutant in its own right, and is a precursor of ozone, numerous types of photochemically generated nitrate particles (including PAN), and atmospheric nitrous and nitric acids.

Nitrogen Oxides (NOx). A group term meaning the combination of nitric oxide and nitrogen dioxide; other trace oxides of nitrogen may also be included in instrument-based NOx measurements. A precursor of ozone, photochemically generated nitrate particles (including PAN), and atmospheric nitrous and nitric acids.

Nonattainment Area. An area that does not meet a federal or state ambient air quality standard. Federal agency actions occurring in a federal nonattainment area are subject to Clean Air Act conformity review requirements.

Organic Compounds. Compounds of carbon containing hydrogen and possibly other elements (such as oxygen, sulfur, or nitrogen). Major subgroups of organic compounds include hydrocarbons, alcohols, aldehydes, carboxylic acids, esters, ethers, and ketones. Organic compounds do not include crystalline or amorphous forms of elemental carbon (graphite, diamond, carbon

black, etc.), the simple oxides of carbon (carbon monoxide and carbon dioxide), metallic carbides, or metallic carbonates.

Ozone (O3). A compound consisting of three oxygen atoms. Ozone in the lower atmosphere is a major constituent of photochemical smog that is formed primarily through chemical reactions in the atmosphere involving reactive organic compounds, nitrogen oxides, and ultraviolet light. Ozone is a toxic chemical that damages various types of plant and animal tissues and which causes chemical oxidation damage to various materials. Ozone is a respiratory irritant, and appears to increase susceptibility to respiratory infections. A natural layer of ozone in the upper atmosphere absorbs high energy ultraviolet radiation, reducing the intensity and spectrum of ultraviolet light that reaches the earth's surface.

Particulate Matter. Solid or liquid material having size, shape, and density characteristics that allow the material to remain suspended in the atmosphere for more than a few minutes. Particulate matter can be characterized by chemical characteristics, physical form, or aerodynamic properties. Categories based on aerodynamic properties are commonly described as being size categories, although physical size is not used to define the categories. Many components of suspended particulate matter are respiratory irritants. Some components (such as crystalline or fibrous minerals) are primarily physical irritants. Other components are chemical irritants (such as sulfates, nitrates, and various organic chemicals). Suspended particulate matter also can contain compounds (such as heavy metals and various organic compounds) that are systemic toxins or necrotic agents. Suspended particulate matter or compounds adsorbed on the surface of particles can also be carcinogenic or mutagenic chemicals.

Peak particle velocity. A measure of ground-borne vibrations. Physical movement distances are typically measured in thousandths of an inch, and occur over a tiny fraction of a second. But the normal convention for presenting that data is to convert it into units of inches per second.

Percentile Sound Pressure Level (Lx). The decibel level exceeded x percent of the time during a monitoring episode.

Peroxyacetyl Nitrate (PAN). A toxic organic nitrate compound formed by photochemical reactions in the atmosphere. PAN is a strong respiratory and eye irritant, and a strong necrotic agent affecting plant tissues. Also called peroxyacetic nitric anhydride. A number of similar organic nitrate compounds are formed along with PAN during photochemical smog reactions. In relatively remote rural areas PAN and related organic nitrates, together with nitric acid, are often the dominant atmospheric nitrogen compounds generated by photochemical smog reactions.

pH (parts hydrogen). The logarithm of the reciprocal of hydrogen-ion concentration in gram atoms per liter. Used as a measure of acidity.

PM_{10} (inhalable particulate matter). Suspended particulate matter with aerodynamic equivalent diameters smaller than 50 micrometers, which can penetrate to the lower respiratory tract (tracheo-bronchial airways and alveoli in the lungs).

$PM_{2.5}$ (fine particulate matter). Suspended particulate matter with aerodynamic equivalent diameters smaller than approximately 2.0 – 2.5 micrometers, which can penetrate into the alveoli in the lungs.

Precursor. A compound or category of pollutant that undergoes chemical reactions in the atmosphere to produce or catalyze the production of another type of air pollutant.

Prehistoric Resources. Those attributed to Native American groups who occupied the region before contact with Europeans; historic resources are those associated primarily with Europeans and Americans but also include resources of Native Americans following contact.

Protocol Agreement (Protocol). A modified version of the NPA, adapted to the unique requirements of managing cultural resources on public lands in California, and is used as the primary management guidance for BLM offices in the state.

Reactive Organic Compounds (ROC). The most technically accurate term for the organic precursors of ozone and other photochemically generated pollutants. The more commonly used term is "reactive organic gases (ROG)", although many of the compounds of concern may be present in both gaseous and aerosol states.

Reactive Organic Gases (ROG). Organic compounds emitted into the air which have photochemical reaction rates sufficient to be considered precursors of ozone. Organic compounds that are not considered reactive in the lower atmosphere include methane, ethane, acetone, methyl acetate, carbonic acid, ammonium carbonate, methylene chloride, methyl chloroform, and numerous fully-saturated chloro-flourocarbon compounds.

Riparian. Situated on or pertaining to the bank of a river, stream, or other body of water. Normally describes plants of all types that grow rooted in the water table or sub-irrigation zone of streams, ponds, and springs.

Scenic Vista. A distant view of a broad area that is visually or aesthetically pleasing.

Special Status Species. Federal- or state-listed species, candidate or proposed species for listing under the provisions of the Endangered Species Act or a comparable state law, or species otherwise considered sensitive or threatened by state and federal agencies.

State Implementation Plan (SIP). Legally enforceable plans adopted by states and submitted to EPA for approval that identify the actions and programs to be undertaken by the State and its subdivisions to achieve and maintain national ambient air quality standards in a time frame mandated by the Clean Air Act.

State Water Resources Control Board (SWRCB). Created in 1967, joint authority of water allocation and water quality protection enables the State Water Board to provide comprehensive protection for California's waters. The mission of the nine Regional Boards is to develop and enforce water quality objectives and implementation plans that will best protect the State's waters, recognizing local differences in climate, topography, geology and hydrology.

Sulfur Dioxide (SO2). A pungent, colorless, and toxic oxide of sulfur formed primarily by the combustion of fossil fuels. It is a respiratory irritant, especially for asthmatics. A criteria pollutant in its own right, and a precursor of sulfate particles and atmospheric sulfuric acid.

Sulfur Oxides (SOx). A group term meaning the combination of sulfur dioxide and sulfur trioxide; treated as a precursor of sulfur dioxide, sulfate particles, and atmospheric sulfuric acid.

Teratogen. A chemical substance or physical agent that causes birth defects through abnormal development or malformation of a fetus.

Total Maximum Daily Load (TMDL). A TMDL is a calculation of the maximum amount of a pollutant that a waterbody can receive and still safely meet water quality standards.

Toxic. Poisonous. Exerting an adverse physiological effect on the normal functioning of an organism's tissues or organs through chemical or biochemical mechanisms following physical contact or absorption.

Traditional Cultural Properties. Areas associated with the cultural practices or beliefs of a living community. These sites are rooted in the community's history and are important in maintaining cultural identity.

U.S. Secretary of the Interior. The U.S. Department of the Interior is in charge of the nation's internal affairs. The Secretary serves on the President's cabinet and appoints citizens to the National Park Foundation board.

Vehicle Miles Traveled (VMT). The cumulative amount of vehicle travel within a specified or implied geographical area over a given period of time.

Visual character and quality of a site and its surroundings. The combination of visual resources in a specific area that contribute to the overall local setting.

Wetlands. Permanently wet or intermittently water-covered areas, such as swamps, marshes, bogs, potholes, swales, and glades.

Wildlife corridor. A strip of land that aids in the movement of species between disconnected areas of their natural habitat.

LIST OF ACRONYMS

AADT	annual average daily traffic
AB	Assembly Bill
AC	alternating current
ACEC	Area of Critical Environmental Concern
AFM	Awareness Floodplain Mapping
AIRFA	American Indian Religious Freedom Act
AM	Applicant Measure
AMSL	above mean sea level
APCD	Air Pollution Control District
APE	Area of Potential Effects
AQMD	Air Quality Management District
AQRV	air quality related values
ARPA	Archaeological Resources Protection Act
ASTM	American Society for Testing and Materials
BEA	Bureau of Economic Analysis
BGEPA	Bald and Golden Eagle Protection Act
BLM	Bureau of Land Management
BMP	Best Management Practices
BMPs	BLM's Best Management Practices
BO	biological opinion
BOE	California Board of Equalization

BRTR	Biological Resources Technical Report
BSPP	Blythe Solar Power Project
BTU	British thermal units
CAA	Clean Air Act
CADOF	California Department of Finance
CAISO	California Independent System Operator
Cal/OSHA	California Occupational Safety and Health Administration
CARB	California Air Resources Board
CASQA	California Stormwater Quality Association
CASTNET	Clean Air Status and Trends Network
CAT	Climate Action Team
CBC	California Building Code
CCH	Consortium of California Herbaria
CCR	California Code of Regulations
CDCA	California Desert Conservation Area
CDD	California Desert District
CDFG	California Department of Fish and Game
CDPH	California Department of Public Health
CDWR	California Department of Water Resources
CEC	California Energy Commission
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CH_4	methane
CHU	Critical Habitat Unit
CIWMC	California Interagency Watershed Mapping Committee
CMMS	Computerized Maintenance Management Software
CMP	Congestion Management Plan
CNDDB	California Natural Diversity Database
CNEL	community noise equivalent level
CNPS	California Native Plant Society
CO	carbon monoxide
CO_2	carbon dioxide
CPUC	California Public Utilities Commission
CRBC	Colorado River Board of California
CRHR	California Register of Historical Resources
CRPR	California Rare Plant Rank
CSP	concentrated solar power
CTNA	Crucifixion Thorn Natural Area
CUP	Conditional Use Permit
CUPA	Certified Unified Program Agency
CVGB	Chuckwalla Valley Groundwater Basin
CVWD	Coachella Valley Water District

CWA	Clean Water Act
DC	direct current
DCAP	Desert Center Area Plan
DEH	Department of Environmental Health
DHSP	Desert Harvest Solar Project
DOC	determination of compliance
DOE	Department of Energy
DOI	U.S. Department of the Interior
DPF	diesel particulate filter
DPLA	Department of Planning and Local Assistance
DPM	diesel particulate matter
DPV	Devers–Palo Verde
DPV1	Devers–Palo Verde No. 1 Transmission Line Project
DPV2	Devers–Palo Verde No. 2 Transmission Line Project
DRECP	Desert Renewable Energy Conservation Plan
DSSF	Desert Sunlight Solar Farm
DTC/C-AMA	Desert Training Center/California-Arizona Maneuver Area
DTRO	Desert Tortoise Recovery Office
DTSC	Department of Toxic Substance Control
DWMA	Desert Wildlife Management Area
DWR	(California) Department of Water Resources
DWSAP	Drinking Water Source Assessment and Protection
ECMCP	Environmental and Construction Monitoring and Compliance Program
EERE	Energy Efficiency and Renewable Energy
EIR	Environmental Impact report
EIS	Environmental Impact Statement
EMF	electromagnetic fields
EMPS	Eagle Mountain Pumped Storage
EPA	Environmental Protection Agency
EPC	engineering, procurement, and construction
EPS	emission performance standards
ERMA	Extensive Recreation Management Areas
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FHSZ	Fire Hazard Severity Zones
FICUN	Federal Interagency Committee on Urban Noise
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FIRM	Flood Insurance Rate Map
FLPMA	Federal Land Policy and Management Act
FMMP	Farmland Mapping and Monitoring Program
FP	Fully Protected
FPM	Floodplain Management
FRA	Federal Responsibility Area

GHG	greenhouse gas
GIP	Generator Interconnection Procedures
GIS	Geographic Information System
GO	General Order
GSEP	Genesis Solar Energy Project
HA	Hydrologic Area
HAP	Hazardous Air Pollutant
HCP	Habitat Conservation Plan
HMP	Habitat Management Plan
HR	Hydrologic Region
HSC	Health and Safety Code
HU	Hydrologic Unit
I-10	Interstate 10
IBC	International Building Code
ICC	International Code Council
IMPROVE	Inter-agency Monitoring of Protected Visual Environments
IOU	investor-owned utility
IPCC	Intergovernmental Panel on Climate Change
ISO	Insurance Service Office
IWMB	Integrated Waste Management Board
IWMP	Integrated Weed Management Plan
JTNP	Joshua Tree National Park
KOP	Key Observation Point
LACM	Natural History Museum of Los Angeles County
LOS	Level of Service
LR2000	Mineral Legacy Rehost 2000 System of automated records
LRA	Local Responsibility Area
LST	Localized Significance Threshold
LTVA	Long Term Visitor Area
LU	land use
LUST	Leaking Underground Storage Tank
MBTA	Migratory Bird Treaty Act
MDAQMD	Mojave Desert Air Quality Management District
MEC	munitions and explosives of concern
MLD	Most Likely Descendent
MM	mitigation measure
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MRDS	Mineral Resources Data System
MRZ	mineral resource zone
MSDS	Material Safety Data Sheet
MTPs	BLM Master Title Plats
MUC	Multiple Use Class
MW	megawatt
MWD	Metropolitan Water District of Southern California

N_2O	nitrous oxide
N-A	Natural Assets
NAGPRA	Native American Graves Protection and Repatriation Act
NAHC	Native American Heritage Commission
NCCP	Natural Community Conservation Planning
NCMPD	North Chuckwalla Mountain Petroglyph District
NECO	Northern and Eastern Colorado Desert Coordinated Management Plan
NEPA	National Environmental Policy Act of 1969
NERC	North American Electric Reliability Corporation
NFIP	National Flood Insurance Program
NFWF	National Fish and Wildlife Foundation
NHPA	National Historic Preservation Act
NO_2	nitrogen dioxide
NOA	Notice of Availability
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NOP	Notice of Preparation
NPA	Nationwide Programmatic Agreement
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
O_3	ozone
OHV	off-highway vehicle
OPLA	Omnibus Public Lands Management Act
OSHA	Occupational Safety and Health Administration
OWTS	on-site water treatment system
PA	Plan Amendment
PAR	Property Assessment Report
PCE	passenger car equivalent
PCS	power conversion station
PEIS	Programmatic Environmental Impact Statement
PFYC	Potential Fossil Yield Classification
PLP	Polarized Light Pollution
PM10	inhalable particulate matter
PM2.5	fine particulate matter
POD	Plan of Development
PPV	peak particle velocity
PRC	Public Resources Code
PRMP	Paleontological Resource Management Plan
PRPA	Paleontological Resources Preservation Act
PSD	Prevention of Significant Deterioration
PSEP	Palen Solar Energy Project
PTNCL	Prehistoric Trails Network Cultural Landscape
PUP	Public Use Permit

PV	photovoltaic
PVID	Palo Verde Irrigation District
QS	Quaternary Sands
Qal	Quaternary Alluvium
Ql	Quaternary lake or playa sediments
Qc	Pleistocene nonmarine deposits
Qco	Older Pleistocene nonmarine deposits
QT	Quaternary-Tertiary playa deposits
RCRA	Resource Conservation and Recovery Act
RCWMD	Riverside County Waste Management Department
REAT	Renewable Energy Action Team
RES	Renewable Electricity Standard
RHA	Rivers and Harbors Act
RMP	resource management plan
RO	reverse osmosis
ROD	Record of Decision
ROI	Region of Influence
ROW	right-of-way
RPS	Renewable Portfolio Standard
RTP	Regional Transportation Plan
RWQCB	Regional Water Quality Control Board
SAA	Streambed Alteration Agreement
SAC	Science Advisory Committee
SB	Senate Bill
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCE	Southern California Edison
SEZ	Solar Energy Zone
SF_6	sulfur hexafluoride
SFR	single-family residential
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SLF	Sacred Lands File
SMARA	Surface Mining and Reclamation Act
SMGB	State Mining and Geology Board
SO_2	sulfur dioxide
SPCC Plan	Spill Prevention, Control, and Countermeasure Plan
SR	State Route
SRA	State Responsibility Area
SSC	Species of Special Concern
SWPP	Surface Water Protection Plan
SWPPP	storm water pollution prevention plan
SWRCB	State Water Resources Control Board
TDS	total dissolved solids
TLMA	Transportation and Land Management Agency

TMDL	Total Maximum Daily Load
TRB	Transportation Research Board
UBC	Uniform Building Code
UCMP	University of California at Berkeley Museum of Paleontology
UFC	Uniform Fire Code
USACE	U.S. Army Corps of Engineers
USBR	U.S. Bureau of Reclamation
USC	United States Code
USDA	U.S. Department of Agriculture
USEPA	United States Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	underground storage tank
UWMPs	Urban Water Management Plan
VFR	visual flight rules
VMT	vehicle miles traveled
VOC	Volatile Organic Compound
VRI	Visual Resource Inventories
VRM	Visual Resource Management
VS-VC	Visual Sensitivity – Visual Change
WA	Wilderness Area
WDID	Waste Discharge Identification Number
WDR	Waste Discharge Requirement
WEAP	Worker Environmental Awareness Program
WHMA	Wildlife Habitat Management Area
WIMP	Wind Implementation Monitoring Program
WIU	Wilderness Inventory Unit
WQC	Water Quality Certifications
WSA	Water Supply Assessment

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