BLM

United States Department of the Interior
Bureau of Land Management

TYLERHORSE WIND PROJECT

DRAFT PLAN AMENDMENT/ ENVIRONMENTAL IMPACT STATEMENT

Volume 1 of 2

April 2014

CACA #053958

Publication Index #: *BLM/CA/PL-2014/014+1793*

Draft Plan Amendment &
Draft Environmental Impact Statement for the Tylerhorse Wind Project

Publication Index Number: BLM/CA/PL-2014/014+1793
NEPA Tracking Number: DOI-BLM-CA-CAD000-2014-0001-EIS

Tylerhorse Wind Project

United States Department of the Interior
Bureau of Land Management, Ridgecrest Field Office
Ridgecrest, California

April 2014

United States Department of the Interior

Bureau of Land Management

Ridgecrest Field Office
300 S. Richmond Road
Ridgecrest, CA 93555

http://www.blm.gov/ca/ridgecrest/

In reply refer to:
CACA 053958

April 2014

Dear Reader:

I am pleased to announce the availability of the Draft Environmental Impact Statement/Draft Plan Amendment (Draft EIS/PA) for the Tylerhorse Wind Project (TWP). Heartland Wind, LLC (Applicant), a wholly owned subsidiary of Iberdrola Renewables, LLC, is proposing to develop a 60-megawatt (MW) wind energy project in Kern County, California. The TWP would require a plan amendment to the California Desert Conservation Area Plan 1980, as amended, (CDCA Plan). In compliance with the National Environmental Policy Act (NEPA) and the Federal Land Policy and Management Act (FLPMA), the Bureau of Land Management (BLM) prepared the Draft EIS/PA. The decision to be made with respect to the TWP is whether to approve, deny, or approve with modifications the right-of-way (ROW) grant submitted by the Applicant. The planning decision to be made is whether to amend the CDCA Plan to add the TWP site to those identified as suitable for wind energy production.

This Draft EIS/PA analyzes the following alternatives: (1) Proposed Action - BLM would grant the Applicant a ROW for the project as proposed with 40 Wind Turbine Generators (WTGs) and would approve the associated CDCA Plan Amendment; (2) Modified Action - BLM would grant the Applicant a ROW for a modified project design with 37 WTGs Alternative (up to 55.5 MW) and would approve the associated CDCA Plan Amendment; (3) No Action –BLM would deny a ROW for the project and would not approve the CDCA Plan Amendment; (4) No Project – BLM would deny a ROW for the project and approve a CDCA Plan Amendment to identify the area as unsuitable for wind energy development; and (5) No Project - BLM would deny a ROW for the project but would approve a CDCA Plan Amendment to identify the area as suitable for wind energy development.

The Draft EIS/PA will be circulated for a 90-day comment period. The BLM encourages the public to provide information and comments pertaining to the analysis presented in the Draft EIS/PA. We are particularly interested in feedback concerning the adequacy and accuracy of the proposed alternatives, the analysis of their respective impacts on resources, and any new information that would help the BLM as it develops the plan. Comments will be more helpful if they include suggested changes, sources, or methodologies, and reference to a section or page number. Comments containing only opinions or preferences will be considered and included as part of the decision making process; although, they will not receive a formal response from the BLM. Before including your address, phone number, email 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.

All comments must be postmarked no later than 90 days from the date of the Notice of Availability for the Draft EIS/PA is published in the Federal Register by the Environmental Protection Agency. Comments may be sent to Cedric Perry, BLM Project Manager, by mail: 22835 Calle San Juan De Los Lagos, Moreno Valley, CA, 92553; by phone: (951) 697-5388; or by email: blm_ca_tylerhorse_wind_project@blm.gov. A public meeting will be held to discuss issues associated with the development of this wind energy project after publishing of the Draft EIS/PA. Please see BLM's Web page at http://www.blm.gov/ca/st/en/fo/ridgecrest/tylerhorse_wind_project.html for information about the location, date and time of the meeting. All substantive issues raised during the comment period will be considered, and modifications based on these comments may be made to develop a Final EIS/Proposed PA.

Hardcopies or CD-ROM versions of the Draft EIS/PA may be obtained by contacting the Ridgecrest Field Office. The document will also be available on the Internet at:

http://www.blm.gov/ca/st/en/fo/ridgecrest/tylerhorse_wind_project.html.

We are pleased to provide this copy of the TWP Draft EIS/PA for your review and extend our appreciation for your cooperation and assistance during this process. We look forward to your continued participation.

Sincerely,

Carl Symons

Field Manager

Ridgecrest Field Office

Tylerhorse Wind Project

Draft Environmental Impact Statement & Draft Plan Amendment

NEPA Lead Agency:	Bureau of Land Management Ridgecrest Field Office Ridgecrest, California
For further information, contact	Cedric Perry, Project Manager Bureau of Land Management California Desert District Office Moreno Valley, California (951) 697-5308 cperry@blm.gov

Abstract

This Draft Plan Amendment (PA) to the California Desert Conservation Area Plan 1980, as amended, (CDCA Plan) and Draft Environmental Impact Statement (EIS) addresses the Bureau of Land Management's (BLM) consideration of an application for a right-of-way (ROW) grant by Heartland Wind LLC (Applicant), a wholly owned subsidiary of Iberdrola Renewables, LLC, for the construction, operation, maintenance, and decommissioning of a utility-scale 60-megawatt (MW) wind energy facility on public lands in Kern County, California.

The Draft EIS/PA analyzes the following alternatives: (1) the BLM would grant the Applicant a ROW for their project as proposed with 40 wind turbines and amend the CDCA Plan to identify the area as suitable for wind energy development; (2) the BLM would grant the Applicant a ROW for a modified site layout with 37 wind turbines and amend the CDCA Plan as described for Alternative 1; (3) No Action, in which the ROW application would be denied and no amendments to the CDCA Plan would be made; (4) No Project, in which the ROW application would be denied and the CDCA Plan would be amended to identify the site as unsuitable for wind development; and (5) No Project, in which the application would be denied, and the CDCA Plan would be amended to identify the site as suitable for wind development.

The Draft EIS/PA describes the existing conditions on and near the requested ROW and analyzes the potential direct, indirect, and cumulative effects of the proposed action and alternatives. EIS/PA. Many of the identified adverse impacts can be avoided or substantially reduced based on compliance with applicable laws, ordinances, regulations and standards, and compliance with measures provided in the Draft EIS/PA. The Agency Preferred Alternative identified in the Draft EIS/PA is Alternative 1, the Proposed Action, which covers approximately 1,207 acres of BLM-administered land.

EXECUTIVE SUMMARY

ES.1 Background and Project Overview

Heartland Wind, LLC (Heartland or Applicant), a wholly owned subsidiary of Iberdrola Renewables, LLC, has submitted an application requesting authorization to construct, operate, maintain, and decommission the Tylerhorse Wind Project (TWP or Proposed Action). The application for this Project was filed with the Bureau of Land Management (BLM) as an Application for a Right-of-Way (ROW) authorization to construct, operate, maintain, and decommission, an approximate 1,207-acre, up to 60-Megwatt (MW) wind energy project. The proposed TWP site layout is shown in Figure 2-2 (see Appendix A for figures). This Draft EIS/PA presents the potential environmental effects of the TWP and alternatives, and discusses mitigation measures that, if adopted, could avoid, minimize, or mitigate such impacts. In connection with the BLM's consideration of the Applicant's ROW application, the BLM is considering a related amendment to the California Desert Conservation Area Plan 1980, as amended, (CDCA Plan) to designate the Project site as suitable or unsuitable for wind energy development.

In this analysis, five alternatives, including the TWP as proposed by the Applicant, were developed and evaluated. These include:

1. Alternative 1 (Proposed Action) – Issue ROW grant for 40 Wind Turbine Generators (WTGs) up to 60 MW with associated CDCA Plan Amendment;

2. Alternative 2 – Issue ROW grant for 37 WTGs up to 55.5 MW with associated CDCA Plan Amendment;

3. Alternative 3 (No Action) - No issuance of a ROW grant and no CDCA Plan Amendment;

4. Alternative 4 - No issuance of a ROW grant with CDCA Plan Amendment to identify the area as Unsuitable for wind energy development; and

5. Alternative 5 - No issuance of a ROW grant with CDCA Plan Amendment to identify the area as Suitable for wind energy development.

ES.2 Purpose and Need

ES.2.1 BLM Purpose and Need

As explained in Section 1.1, the BLM's purpose and need for the TWP is to respond to the Applicant's application for a ROW grant to construct, operate, maintain and decommission a wind energy facility on public lands in compliance with FLPMA, BLM ROW regulations, and other applicable federal laws.

ES.2.2 Decisions to be Made

As defined by the purpose and need, the BLM is responding to the Applicant's request for a ROW grant to construct, operate, maintain, and decommission a wind energy facility on public lands. The BLM will decide whether to approve, approve with modifications, or deny issuance of a ROW grant to Heartland Wind, LLC for the Proposed Action. In connection with the BLM's consideration of the TWP ROW application it will also consider whether to amend the CDCA Plan to designate the Project site as suitable or unsuitable for renewable energy development.

ES.2.3 Alternatives

Alternatives to the TWP were evaluated for inclusion in the Draft EIS/PA using appropriate screening criteria pursuant to NEPA. These criteria were used to evaluate whether a potential alternative would achieve the BLM's purpose and need and meet the Applicant's primary project objectives; be feasible; and offer environmental advantages over the Proposed Action including avoidance or reduction of significant environmental impacts. As part of the alternatives screening process, alternatives located on BLM-administered lands and other affected lands and resources were evaluated. Of those alternatives, five alternatives, including the Proposed Action, were developed and evaluated in this Draft EIS/PA (see Chapter 2 for complete descriptions of these alternatives and alternatives that were not carried forward for full analysis):

1. **40 Wind Turbine Generators (Alternative 1, Proposed Action).** This alternative consists of 40 WTGs designed to produce up to 60 MW of energy. The substation, switchyard, O&M facility, and construction lay down areas would be located on the adjacent Manzana Wind Energy Project (MWEP) or Pacific Wind Energy Project (PWEP) site. This alternative would also involve an amendment to the CDCA Plan to find the Project site suitable for wind energy development.

2. **37 Wind Turbine Generators Alternative (Alternative 2).** This alternative is conceptually similar to Alternative 1, but with the southwest 94-acre parcel eliminated from the Project resulting in three fewer WTGs designed to produce up to 55.5 MW of energy. As with Alternative 1, the substation, switchyard, O&M facility, and construction lay down areas would be located on the adjacent MWEP or PWEP sites. This alternative

would also involve an amendment to the CDCA Plan to find the Project site suitable for wind energy development.

3. **No issuance of a ROW grant; No CDCA Plan amendment (Alternative 3, No Action).** Under this alternative none of the Project components would be built and the CDCA Plan would not be amended.

4. **No issuance of a ROW grant; Approval of a CDCA Plan amendment to identify the site as unsuitable for future wind energy development (Alternative 4).** Under this alternative none of the Project components would be built and the CDCA Plan would be amended to identify the Project site as unsuitable for wind energy development.

5. **No issuance of a ROW grant; approval of a CDCA Plan amendment to identify the site as suitable for future wind energy development (Alternative 5).** Under this No Project Alternative none of the Project components would be built and the CDCA Plan would be amended to identify the Project site as suitable for wind energy development.

ES.3 Preferred Alternative

Under NEPA, the "preferred alternative" is a preliminary indication of the Lead Agency's preference of action among the Proposed Action and alternatives. A NEPA Lead Agency may select a preferred alternative for a variety of reasons, including the agency's priorities, in addition to the environmental considerations discussed in the EIS. In accordance with NEPA (40 CFR 1502.14(e)), the BLM has identified Alternative 1, the Proposed Action as the preferred alternative.

ES.4 Comparison of Action Alternatives

Table ES-1 summarizes the environmental consequences of the Proposed Action and Alternative 2. The table does not include the No Action or No Project alternatives as those would result in no impacts.

TABLE ES-1
COMPARISON OF ACTION ALTERNATIVES

Resource	Proposed Action: 40 Wind Turbine Generators	Alternative 2: 37 Wind Turbine Generators
Air Resources	*Mitigated Construction Emissions:* ROG – 2 tons/yr, NO_x - 8 tons/yr, CO – 8 tons/yr, SO_x - 0 tons/yr, PM_{10} – 10, $PM_{2.5}$ – 2 tons/yr *Operation and Maintenance Emissions* - ROG – <1 tons/yr, NOx - 1 tons/yr, CO – 1 tons/yr, SO_x - 0 tons/yr, PM_{10} – 3, $PM_{2.5}$ – 1 tons/yr Maximum daily construction-related NOx emissions would exceed the EKAPCD Thresholds.	*Mitigated Construction Emissions:* ROG – 2 tons/yr, NO_x - 8 tons/yr, CO – 8 tons/yr, SO_x - 0 tons/yr, PM_{10} – 10, $PM_{2.5}$ – 2 tons/yr *Operation and Maintenance Emissions* - ROG – <1 tons/yr, NOx - <1 tons/yr, CO – 1 tons/yr, So_x - 0 tons/yr, PM_{10} – 3, $PM_{2.5}$ – 1 tons/yr Maximum daily construction-related NOx emissions would exceed the EKAPCD Thresholds.
Global Climate Change	*Construction*: CO_{2e} – 38,338 tons/yr *Operation:* CO_{2e} – 2,893 tons/yr	*Construction*: CO_{2e} –, 35,604 tons/yr *Operation:* CO_{2e} – 2,890 tons/yr
Cultural Resources	Six prehistoric cultural resources (CA-KER-1906, TY-Site-1, TY-Site-2, TY-Site-3, TY-Site-4, and TY-Isolate-1) were located within the Area of Potential Effect. Two historic-period sites located within the Area of Potential Effect are refuse scatters and appear to represent debris likely associated with livestock grazing and recreational ORV use. These sites are localized with firmly established boundaries, and none would be directly affected by the proposed Project because all Project components avoid these resources.	Potential impacts to cultural resources for Alternative 2 would be the same as those identified for the Proposed Action.
Environmental Justice	No impact	Same as Proposed Action
Lands and Realty	The project would permanently disturb 24 acres of the 960 acres currently designated as grazing land on the TWP site. The Proposed Action would comply with the development standards and requirements identified by the BLM for rangeland management areas. The proposed TWP site is located on unclassified lands, which are available for disposal. Thus, BLM may decide to dispose of the TWP site even if the ROW is granted and the project is implemented. The Applicant is requesting a ROW grant from the BLM for approximately 1,207 acres of public land. If a ROW grant is approved for the Project, then a land use plan amendment also would be required to identify the site in the California Desert Conservation Area (CDCA) Plan as appropriate for the proposed use. The site is located on lands designated Unclassified. The CDCA Plan states that Unclassified lands are managed on a case-by-case basis, and thus, construction of the Proposed Action would not be inconsistent with the Unclassified designation of the Project site.	Potential impacts to lands and realty would be the same as described for the Proposed Action. However, with the reduction of the size of the Project site, less land would be affected.
Livestock Grazing	A total of 195 acres of foraging acreage would be affected during construction of the Proposed Action. The permanent impacts to approximately 24 acres of rangeland associated with the Proposed Action would be considered minor as the permitted portion of the Antelope Valley allotment potentially affected by the Proposed Action contains 960 acres.	Alternative 2 would be slightly decreased relative to the Proposed Action, a total of 94 acres of foraging acreage would be affected during construction. The permanent disturbance associated with Alternative 2 are estimated to be 23 acres of the total 960 acre total.

Resource	Proposed Action: 40 Wind Turbine Generators	Alternative 2: 37 Wind Turbine Generators
Mineral Resources	No known mineral resources are located in the TWP site, development of the Proposed Action would not interfere with any active mining operations, and would not constitute a substantial impact on regionally or locally important mineral resources.	Alternative 2 would involve the same components as Alternative 1, except with the elimination of the southwest 94-acre parcel from the project. Impacts to mineral resources would be similar to, but less than the Proposed Action.
Noise	*Construction and Decommissioning:* Expected construction noise level for turbine related activities would generally range between 52 and 62 dBA. *Operation and Maintenance:* The highest predicted Project noise level from the maximum turbine layout at a potential residential structure is predicted to be 52 dBA Leq. Potential noise levels at two residences are predicted to be greater than the Kern County Wind Energy Combining District exterior limit of 45 dBA, but none are anticipated to exceed the County's General Plan Ldn limit of 65 dBA (or 55 dBA during the night). Noise and vibration impacts from decommissioning activities would be similar to those associated with construction activities. However, it is anticipated that decommissioning activities would be of shorter duration.	Alternative 2 would require the same amount of construction workforce and operational personnel as the Proposed Action, this alternative would generate a similar amount of construction and operational noise at the nearest sensitive receptors, and impacts would be similar to the Proposed Action.
Paleontological Resources	Net effect of construction of the TWP on paleontological resources would be negligible. Operation and maintenance of the Project would not adversely impact paleontological resources. Decommissioning and closure of the TWP would not adversely impact paleontological resources.	Ground disturbance from Alternative 2 would be less than that associated with the Proposed Action, and potential impacts to paleontological resources would be correspondingly reduced in magnitude.
Public Health and Safety	The use, storage, and disposal of hazardous materials and waste associated with construction of the Proposed Action could result in potential adverse health and environmental impacts associated with improper management resulting in a release of these materials. Construction of the TWP would result in a potential hazard to the public or personnel if a hazardous material spill or leak were to occur. Herbicides, if used for vegetation control around towers and other Project facilities, could result in adverse health effects to the public, maintenance personnel, wildlife, or sensitive vegetation if herbicides are handled improperly or chemical drift occurs away from the target area.	Project impacts would be similar to the Proposed Action; Alternative 2 however would involve a smaller geographic area and shorter construction and decommissioning periods than the Proposed Action.

Resource	Proposed Action: 40 Wind Turbine Generators	Alternative 2: 37 Wind Turbine Generators
Recreation	The TWP site does not have public access nor does it contain any designated recreational resources such as OHV routes or camping grounds, so the construction, operation, maintenance, and decommissioning of the TWP would not directly disrupt any recreational resources onsite. Project construction and operation could, however, adversely affect recreational experiences along the PCT, by causing construction related disturbances such as noise, fugitive dust, and truck and other vehicle ingress and egress to the construction site. Day users, hikers, and RV campers would be restricted in the area of the PCT which passes along the Project site for dispersed recreational opportunities and related experiences and benefits during construction activities.	Impacts of Alternative 2 would be similar but slightly reduced as compared to the Proposed Action. Specifically, impacts would be reduced for recreational users of the Pacific Crest Trail.
Social and Economic Issues	*Construction:* Construction workforce of 75 personnel, comprise 0.4 percent of total construction workforce of the Bakersfield MSA. *Operation and Maintenance:* 12 full-time and part-time skilled or semi-skilled workers to operate and maintain the facility.	Operations spending and employment for Alternative 2 would be expected to be reduced from that for the Proposed Action and, consequently, the social and economic impacts would be similarly lesser in magnitude.
Soil Resources	Soil-disturbing activities would occur during construction of the TWP, including excavation and grading. The topography of the Project site and the low average annual precipitation for the area would reduce the likelihood of erosion and loss of topsoil related to routine access road maintenance. Earth-disturbing activities that would occur during the decommissioning phase could result in soil erosion and/or loss of topsoil, similar to the effects of earth-disturbing activities that would occur during the construction phase, but these effects would be minimized through implementation of the aforementioned BMPs and the decommissioning plan and impacts would be avoided or substantially reduced.	The overall disturbance to onsite soils would be reduced compared to the Proposed Action, but Alternative 2 would not otherwise alter the ground-disturbing activities required during construction that could result in impacts associated with soil erosion and loss of topsoil, unstable geologic units, expansive soils, ground shaking, or landslides.
Special Designations	The Proposed Action would have no direct effects on special designations during construction. Users of the PCT would experience impacts related to dust and noise during construction as well as visual impacts during operation. Decommissioning activities would cause temporary disturbance to users of the PCT.	Alternative 2 would have impacts that are similar to, but slightly less than those described for the Proposed Action as there would be fewer WTGs for Alternative 2, and fewer impacts to the Pacific Crest Trail
Transportation and Public Access	*Construction and Decommissioning:* Increased traffic (approximately 216 one-way workforce related trips, 30 one-way delivery vehicle trips and 177 one-way heavy truck trips per day), the increase in worker and truck traffic during the construction period would not adversely affect LOS conditions. *Operation and Maintenance:* Minor traffic increase.	Alternative 2 would be smaller in size and would include fewer components, the estimated workforce, haul trucks, and operational personnel would be reduced compared to the Proposed Action.

Resource	Proposed Action: 40 Wind Turbine Generators	Alternative 2: 37 Wind Turbine Generators
Vegetation Resources	Directly affect 190.9 acres of vegetation, or approximately 15.8 percent of the total Project area, including approximately 16.8 acres of Joshua Tree Woodland, 79.4 acres of Mojavean Juniper Woodland and Scrub, 42.6 acres of Non-native Grassland, 2.3 acre of Mojave Desert Wash Scrub, and 49.8 acres of Mojave Mixed Woody Scrub (Sapphos, 2014). Following construction, portions of the WTG pad sites, unused portions of roads and the electrical collection system ROW, and extra workspace areas would be reclaimed. Therefore, under the Proposed Action, the total permanent vegetation disturbance would be 23.6 acres; temporary disturbance would be 167.3 acres. No special-status plant species were identified in the Project area.	Alternative 2 would result in direct impacts to the following vegetation communities: 16.8 acres of Joshua Tree Woodland, 65.7acres of Mojavean Juniper Woodland and Scrub, 42.6 acres of Non-native Grassland, 2.3 acres of Mojave Desert Wash Scrub, and 49.8 acres of Mojave Mixed Woody Scrub. The nature of these impacts are similar to the Proposed Action, but Alternative 2 would decrease impacts to vegetation communities by approximately 9.5 acres as compared to the Proposed Action.
Visual Resources	*Construction:* Mitigable short-term impacts from construction lighting and visual dust plumes; adverse effects from large-scale visual disturbance in the landscape. *Operation and Maintenance*: Weak to moderate visual contrast for motorists on public roads, and the viewers located in Rosamond. While the WTGs would be visible from a large area, most public viewers are distant from the site (greater than five miles), and because the base of the mountains already contain numerous wind turbines, the Tehachapi Mountains largely remain the focus of viewer attention, the Proposed Action would not dominate or substantially change the existing landscape character. The TWP would also be visible from a substantial length of the Pacific Crest Trail and would result in moderate visual impacts for users of the trail. *Decommissioning*: Mitigable short-term impacts prior to successful restoration.	Alternative 2 would result in decreased visual impacts relative to the Proposed Action due to the reduced number of WTGs.
Water Resources	The potential for increases in stormwater volumes on site is considered to be minimal but culverts could result in the concentration of stormwater flows and could potentially result in increased erosion and sedimentation onsite. The Proposed Action would not result in the installation of any new facilities within a 100-year flood zone, such that interference with flood flows could result. Proposed withdrawal rates of 7 AF/Y during construction and 2 AF/Y during operation would not be expected to result in substantial drawdown of groundwater levels at source wells.	Reduced intensity of impacts related to water quality, groundwater levels and storage, erosion and sedimentation, surface water, hydrology, flooding and on-site flooding as compared to the Proposed Action.
Wildland Fire Ecology	*Construction and Decomissioning:* The probability of a wildfire occurring as a result of Project construction would be moderate due to the presence of juniper woodland and non-native grassland and typical hot and dry weather conditions that persist for several months of the year and the proposed high level of heavy equipment use during construction. *Operation and Maintenance*: Mitigation measures would reduce potential threat to health and safety of people.	Similar to the Proposed Action.

Resource	Proposed Action: 40 Wind Turbine Generators	Alternative 2: 37 Wind Turbine Generators
Wildlife Resources	*Construction:* Direct disturbance of 190.0 acres of wildlife habitat. *Operation and Maintenance:* Ongoing operation and maintenance impacts may occur during routine inspection and maintenance of Project facilities and normal operation of WTGs, and would include such activities as routine inspections and emergency repairs, and fence maintenance. Potential impact mechanisms also include wildlife interactions with WTGs, the power line collection line, or perimeter security fencing, and potential effects of red strobe warning lights on the movement of aerial species.	*Construction*: Construction-related with Alternative 2 would be similar in type as those described above for the Proposed Action, but the direct disturbance to Mojavean Juniper Woodland scrub and Non-native Grassland would be reduced in proportion to the reduction in Project size for Alternative 2. *Operation and Maintenance:* Direct and indirect operations and maintenance impacts to wildlife resources associated with Alternative 2 would be similar in type as those described for the Proposed Action, but the direct disturbance of the Mojavean Juniper Woodland scrub and Non-native Grassland would be reduced in proportion to the reduction in project size for Alternative 2.

TABLE OF CONTENTS

Tylerhorse Wind Energy Project Draft EIS/Draft PA

Volume 1

Cover Sheet

Dear Reader Letter

Abstract

Executive Summary

		Page
1.	**Introduction and Purpose and Need**	**1-1**
1.1	Purpose and Need	1-2
1.2	General Location and Map	1-4
1.3	Major Authorizing Laws and Regulations	1-4
1.4	Relationship of Proposed Action to BLM Policies, Plans, and Programs, and LUP Conformance Determination	1-5
1.5	Issues Addressed in the NEPA Analysis	1-9
2.	**Proposed Action and Alternatives**	**2-1**
2.1	Overview of the Alternatives Considered in Detail	2-1
2.2	Alternative 1 - Proposed Action (40 WTGs)	2-2
2.3	Alternative 2: Modified Proposed Action (37 WTGs)	2-22
2.4	Alternative 3 - No Action Alternative	2-23
2.5	Alternative 4: No Project; Unsuitable	2-23
2.6	Alternative 5: No Project; Suitable	2-23
2.7	Preferred Alternative	2-24
2.8	Alternatives Considered but Eliminated from Detailed Analysis	2-24
3.	**Affected Environment**	
3.1	Introduction	3.1-1
3.2	Air Resources	3.2-1
3.3	Global Climate Change	3.3-1
3.4	Cultural Resources	3.4-1
3.5	Environmental Justice	3.5-1
3.6	Lands and Realty	3.6-1
3.7	Livestock Grazing	3.7-1
3.8	Mineral Resources	3.8-1
3.9	Noise	3.9-1
3.10	Paleontological Resources	3.10-1
3.11	Public Health and Safety	3.11-1

Page

Volume 1 (continued)

3. Affected Environment (continued)

3.12 Recreation 3.12-1
3.13 Social and Economic Setting 3.13-1
3.14 Soils Resources 3.14-1
3.15 Special Designations 3.15-1
3.16 Transportation and Public Access – Off Highway Vehicle 3.16-1
3.17 Vegetation Resources 3.17-1
3.18 Visual Resources 3.18-1
3.19 Water Resources 3.19-1
3.20 Wild Horse and Burros 3.20-1
3.21 Wildland Fire Ecology 3.21-1
3.22 Wildlife Resources 3.22-1

4. Environmental Consequences

4.1 Introduction 4.1-1
4.2 Air Resources 4.2-1
4.3 Global Climate Change 4.3-1
4.4 Cultural Resources 4.4-1
4.5 Environmental Justice 4.5-1
4.6 Lands and Realty 4.6-1
4.7 Livestock Grazing 4.7-1
4.8 Mineral Resources 4.8-1
4.9 Noise 4.9-1
4.10 Paleontological Resources 4.10-1
4.11 Public Health and Safety 4.11-1
4.12 Recreation 4.12-1
4.13 Social and Economic Impacts 4.13-1
4.14 Soils Resources 4.14-1
4.15 Special Designations 4.15-1
4.16 Transportation and Public Access – Off Highway Vehicle 4.16-1
4.17 Vegetation Resources 4.17-1
4.18 Visual Resources 4.18-1
4.19 Water Resources 4.19-1
4.20 Wildland Fire Ecology 4.2-1
4.21 Wildlife Resources 4.21-1
4.22 Irreversible and Irretrievable Commitment of Resources 4.22-1
4.23 Short-Term Uses of Environment and the Maintenance/Enhancement of Long-Term Productivity 4.23-1

5. Consultation, Coordination and Public Involvement 5-1

5.1 Interrelationships 5-1
5.2 Consultation Processes for ESA Section 7, NHPA Section 106, and Indian Tribes 5-3
5.3 Implementation, Monitoring and Enforcement 5-5
5.4 Public Involvement 5-7
5.5 List of Preparers 5-9

Page

Acronyms and Abbreviations

Glossary

References

Index

Tables

ES-1	Comparison of Action Alternatives	ES-4
2-1	Land Disturbance for Proposed Action (Alternative 1)	2-3
2-2	Wind Turbine Specifications	2-4
2-3	Project Construction Schedule	2-6
2-4	Construction Phase, Estimated Water Supply	2-16
2-5	Dust Suppressants and Environmental Considerations	2-17
2-6	Equipment and Materials Brought On-Site	2-18
2-7	Operational Phase, Estimated Water Supply	2-20
2-8	Land Disturbance for Alternative 2	2-23
3.3-1	Characterization of Business-as-usual GHG Emissions for Kern County	3.3-11
3.4-1	Previously Recorded Prehistoric Archaeological Resources within One Mile of the Project Area	3.4-10
3.4-2	Newly Recorded Prehistoric Archaeological Resources	3.4-11
3.4-3	TY-Site-3 Debitage by Location and Material Type	3.4-12
3.4-4	Newly Recorded Historic-period Archaeological Resources	3.4-15
3.4-5	NRHP Eligibility Recommendations and Potential for Effects to Resources	3.4-17
3.5-1	Racial and Income Characteristics for Residents Within the Environmental Justice Study Area	3.5-2
3.6-1	Multiple-use Class Designations	3.6-3
3.8 1	Mineral Resources in the Vicinity of the Tylerhorse Wind Project Site	3.8-3
3.10-1	Correlation and Ages of Stratigraphic Units in the Project Vicinity	3.10-2
3.12-1	Regional Recreation Areas	3.12-2
3.13-1	Population Profile of the Regional Study Area	3.13-2
3.13-2	Housing Profile of the Regional Study Area (2010)	3.13-3
3.13-3	Industry Employment Projections for 2008 2018, Bakersfield MSA, Kern County	3.13-4
3.13-4	City of Tehachapi 2008 Employment Sectors	3.13-5
3.13-5	Government Revenue and Spending for Kern County, FY 2010 2011	3.13-5
3.14-1	Significant Earthquakes and Epicenter Locations	3.14-3
3.16-1	Definitions for Intersection Level of Service	3.16-5
3.16-2	Existing Peak-Hour Intersection Levels of Service	3.16-6
3.16-3	Existing Daily Roadway Segment Volumes and Operations	3.16-6
3.17-1	Plant Communities within the Project Area	3.17-2
3.17-2	Special-Status Plant Species with Potential to Occur in the Project Area	3.17-8
3.18-1	Determining Visual Resource Inventory Classes	3.18-3
3.18-2	Visual Resource Management Classes	3.18-4
3.18-3	Summary of Visual Values and Management Objectives	3.18-6
3.19-1	Estimated Water Supply Requirements Construction, Operation, and Maintenance	3.19-5
3.22-1	Avian Surveys Conducted in the Project Area and Vicinity	3.22-4
3.22-2	Special-Status Wildlife Species with Potential to Occur in the Project Area	3.22-8

Tables (cont.)

		Page
4.1-1	Cumulative Projects List	4.1-6
4.1-2	Cumulative Projects Within the Geographic Scope of Cumulative Analysis for Each Resource Area	4.1-13
4.2-1	Alternative 1: Unmitigated Estimated Daily Regional Construction Emissions	4.2-3
4.2-2	Alternative 1: Unmitigated Estimated Annual Regional Construction Emissions	4.2-3
4.2-3	Alternative 1: Unmitigated Estimated Daily Operational Emissions	4.2-5
4.2-4	Alternative 1: Unmitigated Estimated Annual Operational Emissions	4.2-6
4.2-5	Alternative 1: Conformity Determination	4.2-7
4.2-6	Alternative 2: Unmitigated Estimated Daily Regional Construction Emissions	4.2-8
4.2-7	Alternative 2: Unmitigated Estimated Annual Regional Construction Emissions	4.2-9
4.2-8	Alternative 2: Unmitigated Estimated Daily Operational Emissions	4.2-10
4.2-9	Alternative 2: Unmitigated Estimated Annual Operational Emissions	4.2-10
4.2-10	Alternative 2: Conformity Determination	4.2-11
4.2-11	Cumulative Annual Construction Emissions	4.2-13
4.2-12	Cumulative Annual Operational Emissions	4.2-14
4.2-13	Alternative 1: Mitigated Estimated Daily Regional Construction Emissions	4.2-17
4.2-14	Alternative 1: Mitigated Estimated Annual Regional Construction Emissions	4.2-18
4.2-15	Alternative 2: Mitigated Estimated Daily Regional Construction Emissions	4.2-19
4.2-16	Alternative 2: Mitigated Estimated Annual Regional Construction Emissions	4.2-19
4.3-1	Alternative 1 GHG Emissions	4.3-3
4.3-2	Alternative 2 GHG Emissions	4.3-4
4.9-1	Noise Levels at Various Distances from Typical Construction Equipment	4.9-2
4.9-2	Noise Levels at Various Distances from Heavy Trucks	4.9-2
4.9-3	Vibration Source Levels for Construction Equipment	4.9-3
4.13 1	Cumulative Project Labor Needs	4.13-7
4.16-1	Trip Generation – construction phase	4.16-4
4.16-2	Year 2012 (No Project) Peak-Hour Intersection Levels of Service	4.16-4
4.16-3	Year 2012 (With Project) Peak-Hour Intersection Levels of Service	4.16-5
4.16-4	Year 2012 with Construction-Related Traffic Daily Roadway Segment Volumes and Operations	4.16-6
4.18-1	Visual Contrast Ratings	4.18-2
4.18-2	Key Observation Points	4.18-3
4.18-3	Visual Contrast Rating summary	4.18-7
4.19-1	Modeled Discharge for Action Area Watersheds	4.19-3
4.19-2	Culvert Summary for Action Area Drainages	4.19-3
4.21-1	Summary of Response Actions Related to VHF Detection of Condors	4.21-40
5-1	List of Preparers	5-9

Volume 2 – Appendices

Appendix A: Figures

2-1	Project Location	A-3
2-2	Conceptual Layout	A-4
2-3	Wind Turbine Examples	A-5
2-4	Location and Pathway of Underground Electrical System	A-7
2-5	Typical Turbine Tower Delivery Truck	A-9
2-6	Laydown Areas, Material Storage, O&M Facility, and Substations in the Proposed Tylerhorse Project	A-11
2-7	Typical Wind Turbine Site Work Area and Pads	A-13
2-8	Turbine Erection	A-14
2-9	Aerial View of Preparations to Erect a Wind Turbine Tower	A-15
2-10	Installation of Rotor	A-16
2-11	Rotor Assembly	A-17
2-12	Typical Pad-Mounted Transformer	A-18
2-13	Typical Underground Collector Cable Trench	A-19
2-14	Alternative 2: 37 Wind Turbine Generators Site Layout	A-20
3.6-1	Tehachapi Wind Resource Area (TWRA)	A-21
3.8-1	Mineral Resources	A-23
3.9-1	Typical Noise Levels	A-24
3.9-2	Land Use Compatibility for Community Noise Environment	A-25
3.11-1	Military Review Map	A-27
3.12-1	Project Location and the Pacific Crest Trail	A-29
3.13-1	BLM Wilderness Area	A-30
3.13-2	ACEC	A-31
3.14-1	Project Location and Garlock Fault	A-32
3.15-1	BLM Wilderness Areas	A-33
3.17-1	Plant Communities within the Project	A-34
3.18-1	Project Viewshed	A-35
3.18-2a	Representative Photographs of Project Vicinity	A-36
3.18-2b	Representative Photographs of Project Vicinity	A-37
3.18-3	Visual Resource Inventory Classes	A-38
3.19-1	100-year Flood Zone	A-39
3.22-1	Avian Surveys	A-40
4.1-1	Cumulative Project Map	A-41
4.4-1	Area of Potential Effect	A-43
4.18-1	Key Observation Point 1, Rosamond City Center	A-44
4.18-2	Key Observation Point 2, Rosamond Road between 90th W. Street and 170th W. Street	A-45
4.18-3	Key Observation Point 3, Pacific Crest Trail	A-46
4.19-1	Project Access Roads in Relation to Ephemeral Drainages	A-47

Appendix B: Scoping Report	B-1
Appendix C: Biological Resources	C-1
Appendix C-1: Biological Resources Technical Report	C.1-1
Appendix C-2: Addendum to the Biological Resources Technical Report	C.2-1
Appendix C-3: Addendum No. 2 to the Biological Resources Technical Report	C.3-1
Appendix C-4: Draft Bird and Bat Conservation Strategy	C.4-1
Appendix D: Cultural Resources	D-1
Appendix E: Noise	E-1
Appendix F: Paleontological Resources	F-1
Appendix G: Visual Resources	G-1
Appendix H: Air Quality	H-1

Appendix I: Fire Management Plan I-1
Appendix J: Weed Management Plan J-1

CHAPTER 1
Introduction and Purpose and Need

Heartland Wind, LLC (Heartland or Applicant), a wholly owned subsidiary of Iberdrola Renewables, LLC has submitted a right-of-way (ROW) application to the Bureau of Land Management (BLM) requesting authorization to construct, operate, maintain, and decommission the Tylerhorse Wind Project (TWP or Proposed Action) on 1,207 acres of BLM-administered lands capable of generating up to 60 megawatts (MW) of wind energy. The TWP would include up to 40 wind turbine generators (WTGs), access roads, a 34.5 kV energy collection system, supervisory control and data acquisition (SCADA) system, fiber optic communications, and fencing. The TWP would share an existing operations and maintenance building with the adjacent and previously approved Manzana Wind Energy Project (MWEP). The MWEP (formerly known as the PdV project) is currently owned and operated by Iberdrola Renewables, LLC. A portion of the TWP may also connect to the Whirlwind Substation through the adjacent, approved Pacific Wind Energy Project (PWEP). Approval of a ROW grant for the TWP would require a plan amendment to the California Desert Conservation Area Plan 1980, as amended, (CDCA Plan) as explained below. The location of the TWP is shown in Figure 2-1 (See Appendix A for all figures referenced in the Draft EIS/PA). The TWP site layout is shown in Figure 2-2.

The decision to be made for the project is whether to approve, deny, or approve with modifications the ROW application submitted by the Applicant. The decision to be made on the CDCA Plan amendment is whether or not to amend the CDCA Plan to find the TWP suitable for wind energy production. In compliance with the National Environmental Policy Act (NEPA), the Federal Land Policy and Management Act (FLPMA), and other applicable authorities, the BLM has prepared this Draft EIS/PA.

This Draft EIS/PA describes and evaluates the potential environmental effects that are expected to result from construction, operation, maintenance, and decommissioning of the Proposed Action and alternatives and discusses mitigation measures that, if adopted, could avoid, minimize, or mitigate the adverse environmental impacts identified. This Draft EIS/PA identifies four alternatives to the Proposed Action. A more detailed explanation of each alternative is included in Chapter 2. Alternatives evaluated, including the Proposed Action, include:

> **Alternative 1 (Proposed Action)** – The BLM would grant the Applicant an approximately 1,207-acre ROW grant for the Project as proposed with 40 WTGs (up to 60 MW of energy production), and would amend the CDCA plan to identify the area as suitable for wind energy development and allow the TWP;

Alternative 2 (Modified Proposed Action) – The BLM would grant the Applicant an approximately 1,113- acre ROW grant for a modified project design with 37 WTGs (up to 55.5 MW of energy production) and would amend the CDCA plan to identify the area as suitable for wind energy development and allow the TWP;

Alternative 3 (No Action) – The BLM would not issue a ROW grant and the CDCA plan would not be amended;

Alternative 4 (No Project; Unsuitable) – The BLM would not issue a ROW grant and the CDCA plan would be amended to identify the area as unsuitable for wind energy development;

Alternative 5 (No Project; Suitable) – The BLM would not issue a ROW grant and the CDCA plan would be amended to identify the area as suitable for wind energy development.

1.1 Purpose and Need

1.1.1 BLM Purpose and Need

In accordance with FLPMA (Section 103(c)), public lands are to be managed for multiple uses that takes into account 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 Heartland to construct, operate, maintain, and decommission a wind energy 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.

Any of the action alternatives would, if approved, assist the BLM in addressing the President's Climate Action Plan, released on June 25, 2013, which sets forth a new goal for the Department of the Interior to approve 20,000 MW of renewable energy projects on the public lands by 2020. The Proposed Action, if approved, would also further the purposes of Executive Order 13212 (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 environmental sound manner," and Secretarial Order 3285A1 (March 11, 2009), which "establishes the development of environmentally responsible renewable energy as a priority for the Department of the Interior."

The BLM will decide whether to deny, grant, or grant with modifications the requested ROW. Modifications 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 the decision on the TWP ROW grant, the BLM's action will also include consideration of an amendment to the CDCA Plan. The CDCA Plan, while recognizing the potential compatibility of wind generation facilities on public lands, requires that all sites associated with power generation or transmission that are not identified in the CDCA Plan be considered through the plan amendment process to determine the suitability of the sites for renewable energy development. The Project site was not previously identified as suitable or unsuitable, so authorization of the TWP would require an amendment to the CDCA Plan.

Applicant's Objectives

The Applicant's objective for the Proposed Action is to construct, operate, maintain, and eventually decommission an up to 60-MW wind energy facility and associated interconnection transmission infrastructure that will provide renewable electric power to California's existing transmission grid and help meet federal and state renewable energy supply and greenhouse gas (GHG) emissions reduction requirements. The Applicant is committed to constructing and operating the project in an environmentally responsible manner and to providing a sustainable source of renewable energy to the State's investor-owned utilities and the public. The Applicant's specific objectives for the project are:

- To provide 60 MW of installed electrical capacity;
- To develop an economically feasible wind energy project through commercially available financing;
- To maximize operational efficiency and provide low-cost renewable energy by locating the project on lands with high wind energy values adjacent to existing wind projects;
- To increase local short-term and long-term employment opportunities;
- To minimize environmental impacts and land disturbance by:
    - Locating the project on "infill" parcels among existing wind projects;
    - Using the ancillary facilities of adjacent existing wind projects;
    - Avoiding disturbance of streambeds; and
    - Avoiding Desert Wildlife Management Areas, Critical Habitat, and Areas of Critical Environmental Concern.
- To assist California in meeting its Renewables Portfolio Standard goal of obtaining 33 percent of electric power from renewable energy sources by 2020 as established by Senate Bill 2 and signed into law on April 12, 2011 by Governor Jerry Brown;
- To assist California in meeting its AB 32 GHG emissions reduction requirements; and
- To assist the BLM in addressing its management objectives related to renewable energy development including Executive Order 13212, the Energy Policy Act of 2005, and Secretarial Order 3285A1.

1.2 General Location and Map

The Applicant is seeking a ROW grant to construct, operate, maintain, and decommission a wind energy project on approximately 1,207 acres of BLM-administered lands. Ancillary facilities will be located on the adjacent MWEP and PWEP that was approved on private lands by the Kern County Board of Supervisors on July 29, 2008 and is currently under construction.

The TWP would be located in Kern County, California approximately 15 miles west of Highway 14, 12 miles south of Highway 58, and 8 miles north of State Route 138 (Figure 2-1). As reflected in the ROW application (CACA 53958), the Proposed Action is located entirely on BLM-administered land in Section 24, lots 1 to 16; Section 26, lots 1 to 8; and Section 28, lot 1 and SW¼SE¼; Township 10 North, Range 15 West, San Bernardino Meridian, California.

1.3 Major Authorizing Laws and Regulations

BLM: The BLM's authority and policy guidance for making a decision related to the Proposed Action is derived from Title V of the FLPMA [43 U.S.C. 1701, et seq, BLM's Wind Energy Development Policy (dated December 19, 2008); Secretarial Order 3285A1 (dated March 11, 2009, as amended February 22, 2010); and BLM Instruction Memoranda 2011-59, 2011-60 and 2011-61 (each dated February 7, 2011). FLPMA authorizes the BLM to issue ROW grants for systems for generation, transmission, and distribution of electric energy.

The United States Fish and Wildlife Service (USFWS): The USFWS has jurisdiction over threatened and endangered species listed under the Endangered Species Act (ESA) (16 U.S.C. Section 1531 et seq.). Formal consultation with the USFWS under Section 7 of the ESA is required for any Federal action that may adversely affect a Federally-listed species. Consultation for the TWP has been initiated through a request by the BLM to the USFWS to initiate formal consultation and the submittal of a Biological Assessment (BA). Following review of the BA, the USFWS is expected to issue a Biological Opinion (BO), which will specify reasonable and prudent measures that must be implemented as part of the project for any protected species.

The USFWS has jurisdiction over bald and golden eagles. The Bald and Golden Eagle Protection Act (16 U.S.C. 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 California Department of Fish and Wildlife (CDFW): CDFW has the authority to protect water resources of the State through regulation of modifications to streambeds, under Section 1602 of the Fish and Game Code. The BLM and the Applicant will provide information to CDFW to assist in its determination of the impacts to streambeds, and identification of permit and mitigation requirements.

CDFW also has the authority to regulate potential impacts to species that are protected under the California Endangered Species Act (CESA). Based on the determination of impacts, the Applicant may need to file an Incidental Take Permit application with CDFW.

1.4 Relationship of Proposed Action to BLM Policies, Plans, and Programs, and LUP Conformance Determination

1.4.1 Federal Land Policy and Management Act of 1976

The 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 and 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, the BLM must also comply with the BLM Planning Regulations (43 CFR Part 1600) and the BLM Land Use Planning Handbook (H-1601-1, March 2005).

1.4.2 California Desert Conservation Area (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 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 (MUCs), MUC guidelines, and plan elements for specific resources or activities, such as motorized vehicle access, recreation, and vegetation. The multiple use classes are Class C (Controlled Use), Class L (Limited Use), Class M (Moderate Use), and Class I (Intensive Use). About 300,000 acres are unclassified. These unclassified lands include scattered and isolated parcels of public land in the CDCA which have not been placed into a specific MUC. The TWP site is located on unclassified lands, and as such, the TWP site is available for disposal. The CDCA Plan states that unclassified parcels, which do not to contain sensitive resources and would be better used for development purposes will be considered for disposal after appropriate inventories and consultation with local governments are completed. Thus, BLM may decide to dispose of the TWP site even if the ROW is granted and the project is implemented. Unclassified land may be disposed of through competitive bid (sale) at fair-market value, land exchanges, or the land may be transferred to another entity through another action (e.g. Congressional direction, or through an existing law that allows transfer of federal land).

Additionally, as stated above, the CDCA Plan requires that all sites associated with power generation or transmission that are not identified in the CDCA Plan be considered through the plan amendment process to determine the suitability of the sites for renewable energy development. Authorization of the TWP would require an amendment to the CDCA Plan to identify the Project site as suitable for wind energy development.

1.4.3 CDCA Planning Criteria

The CDCA 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 the CDCA Plan 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 EIS;

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 the process, approval of the proposed TWP would require a Category 3 amendment. Planning criteria listed in the Notice of Intent (NOI) for the TWP, to help guide and define the scope of the plan amendment process include:

- The plan amendments will be completed in compliance with FLPMA, NEPA, and all other relevant Federal laws, executive orders, and BLM policies;
- Existing, valid plan decisions will not be changed and any new plan decisions will not conflict with existing plan decisions; and
- The plan amendments will recognize valid existing rights.

1.4.4 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 CDCA Plan in 1980. An additional amendment is proposed to be added to this section of the CDCA Plan for the TWP, and would read " Identify the TWP site as suitable for wind energy development and permission granted to construct wind energy facility (proposed TWP)."

Plan Amendment Process

The Plan Amendment process is outlined in Chapter 7 of the CDCA Plan. In analyzing an applicant's request for amending or changing the Plan, the BLM will:

1. Determine if the request has been properly submitted and if any law or regulation prohibits granting the requested amendment;

2. Determine if alternative locations within the CDCA are available that would meet the applicant's needs without requiring a change in the Plan's classification, or an amendment to any Plan element;
3. Determine the environmental effects of granting and/or implementing the applicant's request;
4. Consider the economic and social impacts of granting and/or implementing the applicant's request;
5. 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; and
6. 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 a Proposed Plan Amendment

The decision criteria to be used for approval or disapproval of a proposed plan amendment require that the following determinations be made by the BLM:

1. A proposed plan amendment is in accordance with applicable laws and regulations; and
2. A proposed plan amendment will provide for the immediate and future management, use, development, and protection of the public lands within the CDCA.

The BLM will base the rationale for these determinations on the principles of multiple use, sustained yield, and maintenance of environmental quality as required in FLPMA. The Proposed Action is evaluated according to the above criteria in this Draft EIS/PA in Section 4.6, Lands and Realty.

Decision Criteria for Evaluation of Application

In addition to defining the required analyses and decision criteria for plan amendments, the CDCA Plan also defines the decision criteria to be used to evaluate future applications (e.g. application for ROW) in the Energy Production and Utility Corridors Element of Chapter 3. The Proposed Action is evaluated according to the criteria below in Section 4.6, Lands and Realty. These decision criteria include:

1. Minimize the number of separate ROWs by utilizing existing ROWs as a basis for planning corridors;
2. Encourage joint-use of corridors for transmission lines, canals, pipelines, and cables;
3. Provide alternative corridors to be considered during processing of applications;

4. Avoid sensitive resources wherever possible;
5. Conform to local plans whenever possible;
6. Consider wilderness values and be consistent with final wilderness recommendations;
7. Complete the delivery systems network;
8. Consider ongoing projects for which decisions have been made; and
9. Consider corridor networks which take into account power needs and alternative fuel resources.

1.4.5 Final Programmatic Environmental Impact Statement on Wind Energy Development on BLM-Administered Lands in the Western United States

The BLM is responsible for the development of energy resources on BLM-administered lands in an environmentally sound manner. To support wind energy development on public lands and minimize potential environmental and socio-economic impacts, the BLM, in cooperation with the Department of Energy, completed a Programmatic Environmental Impact Statement on Wind Energy Development on BLM-Administered Lands in the Western United States (Wind PEIS). The Record of Decision for the Wind PEIS signed on December 15, 2005 established a Wind Energy Development Program for the BLM. Elements of the Wind Energy Development Program include: (1) an assessment of wind energy development potential on BLM-administered lands through 2025 (a 20-year period); (2) policies regarding the processing of wind energy development ROW authorization applications; (3) best management practices (BMPs) for mitigating the potential impacts of wind energy development on BLM-administered lands; and (4) amendments of specific BLM land use plans to address wind energy development. This Draft EIS/PA incorporates relevant BMPs identified in the BLM's Wind Energy Development Program.

1.4.6 Desert Renewable Energy Conservation Plan

As part of the Renewable Energy Action Team (REAT), the BLM is working with other federal and state agencies to develop the Desert Renewable Energy Conservation Plan (DRECP) as a key component of California's renewable energy planning efforts. The DRECP addresses approximately 22.5 million acres of federal and non-federal land in the Mojave and Colorado deserts, including lands in seven California counties: Imperial, Inyo, Kern, Los Angeles, Riverside, San Bernardino, and San Diego. The DRECP is proposed as a land use plan amendment in accordance with FLPMA, a Habitat Conservation Plan (HCP) to comply with the Federal Endangered Species Act (FESA), and a Natural Community Conservation Plan (NCCP) to comply with the California NCCP Act and the California Endangered Species Act (CESA). When finalized and adopted, the DRECP will help provide effective protection and conservation of desert ecosystems while allowing for the appropriate development of renewable energy

projects. More information about the DRECP is available on the website for the project, drecp.org (CEC, 2012).

Appendix I to the Description and Comparative Evaluation of Draft DRECP Alternatives[1] provides data and other information about how projects for which an existing application is pending before the BLM are to be treated under the DRECP. For those applications that are currently undergoing NEPA review, the DRECP ROD will not affect applications that reach a project-level ROD prior to completion of the DRECP. For those applications that will not reach a project-level ROD prior to completion of the DRECP, the land use allocation decisions made in the DRECP ROD (including, for example, decisions close or open an area to solar energy development, or additional mitigation requirements) will not affect project applications if the project meets specified criteria:

1. A project that is proposed in a BLM Solar Energy Zone and that is considered a "pending project" under the Solar PEIS ROD (i.e., the project application was filed before June 30, 2009).

2. A project with a published Draft EIS or EA no later than 60 days after release of the DEIS for the DRECP provided the project-level NEPA document includes:

    a. Analysis using the best available information at the time of publication, including data developed in support of the DRECP conservation and recreation strategies, and

    b. Analysis describing the relationship between the project and the DRECP conservation and recreation strategies.

If a project falls within criterion 2, that analysis may be in the project's Final EIS if the project's Draft EIS is published before the DRECP Draft EIS. If the criteria cannot be met, the pending project would be subject to the DRECP. As of the publication of this document, the DRECP Draft EIS has not been published.

1.5 Issues Addressed in the NEPA Analysis

The BLM solicited internal and external input on the issues, impacts, and potential alternatives to be addressed in the Draft EIS/PA for the TWP and associated plan amendment, as well as the extent to which those issues and impacts would be analyzed in the document. This process is called "scoping" (40 CFR 1501.7). Internal input was provided by the BLM to help define issues, alternatives, and data needs. External scoping involved notification and opportunities for feedback from other agencies, organizations, tribes, local governments, and the public.

Formal public scoping for this project began with publication of the TWP NOI in the Federal Register on July 15, 2011. On September 14, 2011, the BLM held a scoping meeting at the

[1] The Description and Comparative Evaluation of Draft DRECP Alternatives is accessible online (http://www.drecp.org/documents/docs/alternatives_eval/Appendices/). Appendix I in particular may be accessed via this link: http://www.drecp.org/documents/docs/alternatives_eval/Appendices/Appendix_I_Pending_Projects.pdf.

Mojave Veterans Building in Mojave, California. A draft scoping report was released to the public in October 2011 (Appendix B). The issues evaluated in the EIS/PA include the physical, biological, socioeconomic resources that have the potential to be affected by activities associated with the proposed TWP and alternatives.

CHAPTER 2
Proposed Action and Alternatives

Heartland Wind, LLC (Heartland or Applicant), a wholly owned subsidiary of Iberdrola Renewables, LLC, has submitted a Right-Of-Way (ROW) application requesting authorization to construct, operate, maintain, and decommission the Tylerhorse Wind Project (TWP or Proposed Action) on 1,207 acres of BLM-administered land in Kern County, California, which is located approximately 15 miles west of California State Highway 14, 12 miles south of California State Highway 58, and 8 miles north of State Route 138. The location of the TWP is shown on Figure 2-1 and in more detail in Figure 2-2.

The legal description for the proposed site location is the following:

> Section 24, lots 1 to 16; Section 26, lots 1 to 8; and Section 28, lot 1 and SW¼SE¼; Township 10 North, Range 15 West, San Bernardino Meridian, California.

The Proposed Action includes an up to 60-megawatt (MW) wind project with up to 40 wind turbines and associated facilities. The Proposed Action would require a plan amendment to the California Desert Conservation Area Plan 1980, as amended, (CDCA Plan). The Draft EIS/PA also identifies four alternatives to the Proposed Action which are described in detail below. This chapter also describes alternatives considered by BLM but eliminated from detailed analysis.

2.1 Overview of the Alternatives Considered in Detail

The two action alternatives, one no action alternative, and two no project alternatives, which are described in detail in Sections 2.4 through 2.5, are as follows:

> **Alternative 1 (Proposed Action)** – BLM would grant the Applicant an 1,207-acre ROW for the Project as proposed with 40 Wind Turbine Generators (WTGs) (up to 60 MW) and would amend the CDCA plan to identify the area as suitable for wind energy development and allow the TWP;
>
> **Alternative 2 (Modified Proposed Action)** – BLM would grant the Applicant an 1,113-acre ROW for a modified project design with 37-WTGs (up to 55.5 MW) and would amend the CDCA plan to identify the area as suitable for wind energy development and allow the TWP;
>
> **Alternative 3 (No Action)** – BLM would deny the ROW and the CDCA plan would not be amended;

Alternative 4 (No Project; Unsuitable) – BLM would deny the ROW and the CDCA plan would be amended to identify the area as unsuitable for wind energy development;

Alternative 5 (No Project; Suitable) – BLM would deny the ROW and the CDCA plan would be amended to identify the area as suitable for wind energy development.

2.2 Alternative 1 - Proposed Action (40 WTGs)

The Proposed Action (TWP) includes BLM granting a ROW for 1,207 acres for the construction, operation, maintenance and decommissioning of up to 40 WTGs with an anticipated total generating capacity of up to 60 MW and associated support facilities including access roads and a 34.5 kV energy collection line on BLM-administered land. The conceptual turbine and access road layout for the Proposed Action is shown on Figure 2-2. The TWP would be located entirely on BLM-administered lands in Kern County, California (Figure 2-1). Privately owned land surrounds the project site, but there are no privately owned lands within the project boundaries. Access to the TWP site would be from roads on adjacent private parcels entitled for the Manzana Wind Energy Project (MWEP), Pacific Wind Energy Project (PWEP) and Catalina Renewable Energy Project (CREP), located adjacent to the project site (see Figure 2-1).

The Proposed Action also involves an amendment to the CDCA plan. Under the Proposed Action, the CDCA plan would be amended to identify the area as suitable for wind energy development and to allow construction and operation of the TWP.

The TWP would use the ancillary facilities of the adjacent MWEP and PWEP. Shared facilities include the MWEP's previously approved O&M facility, collector substation, 220 kV transmission line, as well as MEWP and PWEP staging, refueling areas, and concrete batch plant. A portion of the TWP may also connect to the Whirlwind Substation through the adjacent PWEP.

Electrical power from the TWP would connect to a substation located on the MWEP, which would interconnect with Southern California Edison's Whirlwind Substation (Tehachapi Renewable Transmission Project Substation 5) by means of a 220-kV overhead transmission line. A portion of the TWP may also connect to the Whirlwind Substation through the adjacent PWEP. The TWP would utilize new internal 34.5-kV transmission lines. Since these new transmission lines would be below161 kV, the CDCA Plan would not need to be amended to accommodate these new lines.

Temporary and permanent land disturbance calculations were based on the conceptual site plan provided on Figure 2-2. To provide a conservative estimate of land disturbance impacts, a maximum of 40 turbine locations was used in the impact calculations shown on Table 2-1 and Figure 2-7.

Temporary land disturbance related to construction of the TWP is estimated at approximately 171.1 acres, which is approximately 14 percent of the proposed ROW area. Permanent disturbance related to the TWP is estimated at approximately 24.3 acres, approximately two percent of the ROW area. About 22.3 acres of this total would be associated with TWP access roads. The WTGs would together occupy a total of 2 acres for the permanent turbine pads.

Table 2-1 provides the total acres of permanent and temporary disturbance associated with the Proposed Action.

TABLE 2-1
LAND DISTURBANCE FOR PROPOSED ACTION (ALTERNATIVE 1)

Component	Temporary Disturbance	Permanent Disturbance
Wind Turbine Tower Pads (55 by 40 feet permanent turbine pad, within a 220 feet radius temporary work area)	139.4	2.0 Acres
Electrical Collection System (14-**feet** on one side of **access road**)	43,306 feet 13.9 Acres	0
Access Roads (20 **feet wide** permanent travel width, with 8 feet wide temporary shoulders on each side of road)	48,489 feet 17.8 Acres	48,489 feet 22.3 Acres
Fiber Optic Cable	Within electrical collection system disturbance	
Material Storage/Staging/ Laydown Areas	N/A	N/A
Concrete Batch Plant	N/A	N/A

SOURCE: Heartland Wind LLC, 2014.

2.2.1 Structures and Facilities

The TWP includes various components related to the generation and transmission of renewable wind energy. There are five principal components:

1. Up to 40 WTGs;
2. A 34.5-kV electrical collection system linking each turbine to an off-site substation previously permitted by Kern County;
3. An access road system;
4. Supervisory control and data acquisition (SCADA) system and fiber optic communications; and
5. Fencing.

Wind Turbine Generators

Wind turbine technology is continually improving and the cost and availability of specific types of turbines vary from year to year. Therefore, a representative range of turbine types that are most likely to be used for the proposed TWP is included in Table 2-2. Note that fewer WTGs are required to generate an equivalent amount of power if a higher capacity WTG is used versus lower capacity WTGs. In order to maximize power generation due to terrain and wind conditions, a combination of WTGs from different manufacturers could be used to generate up to 60 MW. Figure 2-3 shows examples of proposed turbine models. Although hub heights and rotor diameters vary slightly by manufacturer, specifications for the 3.0 MW Vestas have been used for the purposes of analysis in this Draft EIS/PA to assume the most conservative estimates regarding

potential turbine impacts. The WTGs would be arranged in parallel arrays (turbine strings) running north-northeast to south-southwest (see Figure 2-2). Spacing of the wind turbines along the arrays would be based on the final turbine selection. In general, the turbines are spaced 2.5 to 3 rotor diameters apart side-to-side and 6 to 8 rotor diameters between downwind turbine strings.

TABLE 2-2
WIND TURBINE SPECIFICATIONS

Manufacturer	Model	Capacity (MW)	Rotor Diameter (feet)	Hub Height (feet)	Maximum Height from Tower Base to Blade Tip (feet)
Vestas	90–3.0 MW	3.0	295	262/ 295/ 344	407/ 440/ 489
GE	SLE	1.5	253	262 feet	389

SOURCE: Heartland Wind LLC, 2014.

Tower Structures

The towers that support the WTGs would be approximately 350-foot-high tapered monopoles. The wind turbine rotors would be approximately 300 feet in diameter. The towers may be shorter and the rotor diameters larger depending on final turbine selection, but the maximum total height from tower base to blade tip would be up to approximately 500 feet. The 15 to 18-foot-diameter wind turbine towers would be mounted on concrete foundations approximately 50 feet in diameter and would each occupy an approximately 55-foot by 40-foot graveled pad. All tower structures, foundations, and pads would occur within each turbine's 220-foot radius temporary work area. The maximum amount of land that would be permanently occupied by 40 wind turbine pads would be approximately 2 acres.

Rotor Blades

The rotor blades typically turn at approximately 20 revolutions per minute (rpm) or less. Generally, larger WTGs have slower rotating blades, but the specific rpm values depend on aerodynamic design and vary across machines. The diameter of the circle swept by the blades would be approximately 295 feet based on a 3.0 MW Vestas model.

Electrical Collection System

The collector system that gathers the power generated by the turbines is made up of sections of underground cable and potentially overhead wires. These collector cables are installed between turbines to collect power generated by the individual wind turbines. Collector lines would be installed within a 14-foot temporary disturbance corridor on one side of the turbine access roads. This 14-foot wide disturbance area is considered a temporary disturbance area and would be restored upon completion of construction.

The generator step up (GSU) transformer at each wind turbine tower converts the generated voltage from approximately 690 volts (V) turbine operating voltage to 34.5 kilovolts (kV) collector system voltage for power delivery to the off-site collector substation. The GSU

transformers would be connected to the 34.5 kV underground power cables (collector lines), In some cases the transformer is mounted in the top of the turbine and the collector cables are connected to 34.5kV in the bottom of the turbine tower. As part of the final design engineering, a field survey would be conducted to determine the exact power pole locations for overhead collector lines, if required. Holes would be drilled and the poles erected with a small crane or boom truck. The poles would be set in place using concrete compacted clean fill, according to engineer's specifications. Cables connect to the overhead lines through "riser" poles that are fitted with gang operated switches for isolation of the cable circuits when needed.

Transmission

Electrical power from the TWP would connect to a substation located on the MWEP, which would interconnect with Southern California Edison's Whirlwind Substation (Tehachapi Renewable Transmission Project Substation 5) by means of a 220-kV overhead transmission line. A portion of the TWP may also connect to the Whirlwind Substation through the adjacent PWEP.

Access Roads and Turbine Connector Roads

Access to the TWP site would be from the corner of Rosamond Boulevard and north along 170th Street West, then along access roads entitled for the MWEP, PWEP and CREP. While existing roads would be used to the greatest extent possible, new unpaved roads would be constructed to serve as access roads across the TWP site to turbines located within the proposed site.

New unpaved roads would also be constructed along and between each turbine array to provide for construction and maintenance access to each turbine site (Figure 2-2). These turbine connector roads would be located relative to the permanent wind tower pads and would have a permanent travel width of 20 feet and a road base[1] or gravel surface. The total road width would be 36 feet, with 8 feet on either side to be reseeded but retained for future use, as needed. These 8-feet shoulder disturbance areas are considered temporary disturbance areas and would be restored upon completion of construction. Turning radii for turbine blade deliveries would be either 76 feet or 115 feet depending on the number of turbine blades transported at a time. All roads within the TWP site have been designed to avoid streambed crossings. Final service road alignments would depend upon the final placement of wind turbines and on the results of field investigations, including topography and any other site-specific details to be incorporated into the final design.

Supervisory Control and Data Acquisition (SCADA) System and Fiber Optic Communications

A SCADA system would be installed at the TWP site to collect operating and performance data from each wind turbine to provide for remote operation of the TWP from the existing off-site Operations and Maintenance (O&M) facility that is located within the adjacent MWEP. The wind turbines would be linked to a central computer in the off-site O&M building by a fiber optic network. The fiber optic cables used for SCADA communication would be placed in the same

[1] Road Base is blend of Gravel and fine material which when compacted will form a hard surface with a high level of mechanical strength

trenches used for the Project's 34.5-kV electrical collection system (Figure 2-4, SCADA Systems in the Proposed Tylerhorse Project). Like the collector cables, the SCADA would connect to the substation located on the MWEP across adjacent private parcels entitled for the MWEP and PWEP.

2.2.2 General Construction Information

Construction Schedule

The TWP would be constructed in a single phase. Construction of the Proposed Action is expected to take 4 months. However, construction could be delayed by weather or other unforeseen circumstances. Therefore, a two-year pre-operating period has been requested by the Applicant to allow adequate time for construction. Table 2-3, Project Construction Schedule, outlines a general construction schedule for the Proposed Action.

Construction Work Force

Under the Proposed Action, direct monthly employment is anticipated to peak at 75 on-site jobs during construction. Aggregate employment over the duration of the construction period would be the equivalent of about 50 full-time jobs for one year. Various phases of construction would occur at different locations throughout the project site during the construction process and, in some cases, multiple construction phases could be carried out concurrently at a number of locations. The Applicant would use local or non-local contractors/subcontractors according to project required equipment and personnel needs. The Applicant anticipates that a large percentage of the work force would be from California, although workers from various parts of the country may be required.

TABLE 2-3
PROJECT CONSTRUCTION SCHEDULE

Task/Milestone	Start	Finish
Obtain Approvals		January 2015
Road Construction	Month 1	Month 1
Wind Turbine Foundation Construction	Month 1	Month 4
Electrical Collection System Construction	Month 2	Month 3
Wind Turbine Assembly and Erection	Month 2	Month 4
Plant Energization and Commissioning	Month 3	Month 4
Plant Substantial Completion	Month 3	Month 4
Construction Cleanup	Month 3	Month 4

SOURCE: Heartland Wind LLC, 2014.

Construction Transportation

Access to the TWP site is from State Route 14 by way of Rosamond Boulevard, and then along 170th Street and roads entitled for MWEP, PWEP, and CREP. Trucks transporting turbines, towers, and other construction materials would use State Route 138 (Avenue D) as an alternative route to avoid traffic conflicts in the incorporated areas of Rosamond. State Route 138 can be accessed from either State Route 5 or 14 from both the east and the west to 170th Street West.

Materials would be brought to the turbine site pad for staging or to material storage or laydown yards located in the adjacent MWEP and PWEP area.

Although many of the trucks bringing wind turbine components to the TWP site would be oversized (extra-long for wind turbine blade and tower transport and heavy-load for wind turbine nacelles), it is anticipated that no major road improvements would be needed to accommodate delivery and construction traffic along the public roads and highways (Figure 2-5, Typical Turbine Tower Delivery Truck). Transportation and construction contractors would obtain all necessary permits for transportation-related elements of the TWP from United States Department of Transportation (DOT) and California Department of Transportation (Caltrans).

Equipment and material hauling would be performed in such a manner as to prevent damage to areas outside the TWP site and to minimize interference with normal uses of lands crossed. A Transportation Management Plan would be developed by the Applicant to address issues specific to transporting turbine components, transmission line components, main assembly cranes, and other construction equipment (see Section 2.4.5, Transportation Management).

In addition, a Traffic Management Plan for site access points would be prepared by the Applicant to minimize potential hazards from increased truck traffic and worker traffic and to minimize impacts to traffic flow in the vicinity of the TWP. During construction, a 15- to 25-mile-per-hour (mph) speed limit would be observed on the BLM ROW for the TWP. Travel on other access roads would be as posted (see Section 2.4.5, Traffic Management).

Construction Vehicle Maintenance and Refueling

Routine vehicle and equipment maintenance activities would be performed off site. Only emergency repairs of vehicles and equipment would take place in the project area. Broken-down vehicles or equipment would typically be trucked or towed off the project site for repair.

Special Work Areas

Residential Areas

Special construction activities for crossing rural residential areas would include maintaining access to and from residences at all times unless express authorization is obtained from the landowner and implementing dust control measures. Each crossing would have either an alternative route or minimal wait time (30 minutes) for egress and ingress, unless otherwise negotiated with the property owner.

Agricultural Lands

Protection measures would include the segregation and conservation of topsoil, as appropriate. Weed control measures would be implemented, and revegetation efforts would be repeated, if necessary (see Section 2.4.6 Noxious Weeds Management).

2.2.3 General Construction Methods

Vegetation Clearing and Grading

Vegetation clearing would be necessary for new roads, turbine pads, and underground electrical collection system pathways. Trees, brush, other woody material, and rocks would be placed in designated areas for later use to restore disturbed areas following construction to aid in erosion control, create wildlife habitat, and discourage off-road vehicular use of the TWP site.

Construction laydown areas and permanent TWP facilities would be cleared of vegetation and graded. In relatively flat areas that would not be occupied by permanent structures, clearing may only involve cutting shrubs near the base and leaving the root structure in the ground to minimize soil disturbance and would be accessed without grading. This construction method is intended to minimize the disturbance of soils and vegetation. Topsoil would be stockpiled during grading and affected areas would be reseeded after construction is complete. A Construction Reclamation Plan would be prepared by the Applicant and to address regrading and revegetation of areas temporarily disturbed by construction.

Topsoil Removal and Protection

Topsoil material that is suitable for site reclamation would be removed in conjunction with clearing and grading and reserved in stockpiles.

Erosion control measures would be used in areas where surface disturbance and/or slope leave the soil susceptible to wind and water erosion. Compliance with the National Pollution Discharge Elimination System (NPDES) General Storm Water Construction Permit, dust control Best Management Practices (BMPs) required by the Wind Energy PEIS, and other site-specific BMPs developed over the course of NEPA review would be implemented, as appropriate.

Material Storage, Staging and Laydown Areas

The TWP site would not be used for material storage, staging or laydown areas for construction. To minimize disturbance, the TWP would use the existing material storage/staging/laydown areas located on the adjacent PWEP and MWEP (Figure 2-6, Laydown Areas, Material Storage, O&M Facility, and Substations in the Proposed Tylerhorse Wind Project).

Equipment Refueling

No fueling stations are anticipated to be constructed on the TWP site. Fueling stations approved for the adjacent MWEP and PWEP may be used for TWP construction refueling. Fuel may be transported to the site in trucks with fuel tank capacities no greater than 100 gallons. Each refueling truck would be equipped with a spill kit and would be operated consistent with a Spill Prevention, Control and Countermeasure Plan (SPCC Plan) developed for the TWP (see Section 2.4.6 Environmental Plan). Refueling would occur in areas of the TWP site that would be disturbed for other construction purposes.

Concrete

The Proposed Action would require the construction of concrete foundations for each wind turbine tower and each transformer pad located at the base of the turbine. To minimize disturbance, the TWP would use the portable concrete batch plant approved for the adjacent MWEP or PWEP.

Access Roads and Turbine Connector Roads

Construction of the TWP would require construction of new roads to provide access for personnel and vehicles. These roads would be constructed along and between the turbine arrays. Because the turbine arrays are generally perpendicular to the direction of the prevailing winds, access roads would, to a large extent, would be similarly oriented. The locations of planned access roads for the TWP are shown on Figure 2-2. Approximately 9.2 miles of new permanent access roads would be constructed for construction and operation of the TWP.

The large cranes used for assembly of the wind turbines would travel overland to the turbine connector roads along the TWP's access roads (Figure 2-2). No clearing or grading would take place except as already required for the access roads and for the installation of electrical and fiberoptic lines within 14 feet of one side of the access roads.

The 20-foot wide permanent travel width of TWP access roads would be constructed of gravel over native ground. The gravel would be procured off-site. A sprayed-on palliative and sealant, such as a synthetic polymer or chipseal, may be used to improve airborne dust mitigation in addition to strengthening road surfaces during grading operations. These access roads would provide permanent vehicular access to each wind turbine site during the operations, maintenance, and decommissioning phases of the TWP. Following construction, the 8-foot wide shoulders on both sides of these roads would be reduced by reseeding the edges.

The general design criteria listed below are typical for wind energy facilities and, with some variations related to terrain, access, and other engineering requirements including safety of construction and maintenance activities, would be used at the TWP.

Maximum road widths:

a. Total road width of 36 feet; permanent travel width of 20 feet; 8 feet on either side would be reseeded but retained for crane movement;

Turning radius:

a. 115 feet wherever possible (based on transporting three turbine blades at a time)

b. 76 feet where necessary (based on transporting one turbine blade at a time)

Design speed:

a. 15 to 25 mph

Access road construction would begin with site preparation, including constructing TWP access entryways from public and site roads. Because of the relatively flat terrain in the TWP site, very

little cut-and-fill would likely be required for access road construction. TWP roads would have a total width of 36 feet; 8 feet on either side of a 20-foot-wide permanent road surface would be reseeded but retained for crane movement throughout the operations phase. Road construction would be performed in multiple phases starting with rough grading and leveling of roadways.

Once heavy construction is complete, a final pass would be made with the grading equipment to level out road surfaces. Water bars would be cut across roads as needed to allow for natural drainage of water over the road surface and to prevent road washout. Side ditches would be excavated as needed to allow for natural drainage of water away from the road surface and to reduce the potential for erosion. Excavated soil and rock would be used on site for road construction or distributed or disposed off-site. Larger excavated rocks would be buried or crushed and reused on-site as backfill or roadway material.

Site access and turbine string roads would generally be constructed in the following sequence.

1. Stake ROW centerline and boundaries of roads as necessary for construction
2. Install temporary stabilization features, such as silt fences, straw bales, and other controls at the limits of construction
3. Clear and grub area associated with road
4. Separate and stockpile topsoil and vegetation for later use
5. Grade roads to slopes/design indicated on construction drawings
6. Compact sub-grade
7. Perform final stabilization/revegetation of disturbed areas associated with roadway corridor
8. Remove temporary stabilization measures once final stabilization/revegetation is established.

Once construction is complete, reclamation would be initiated in areas disturbed by construction. After final grading and restoration to approximately original contours, revegetation would be performed using seed mixtures and techniques developed in consultation with BLM.

After construction, all areas with soil disturbance would be surveyed for the presence of noxious weeds. Noxious weed control would continue on site during the revegetation process and operation phase of the TWP according to the specifications stipulated in the Noxious Weed Management Plan.

Wind Turbines

The wind turbine towers and the nacelle/rotor units would be assembled and erected at each wind turbine site.

Wind Turbine Tower Work Area/Crane Pad Preparation

Wind turbine construction would involve a 220-foot radius work area at each wind turbine site for delivery, laydown, and assembly of turbine components (Figure 2-7, Typical Wind Turbine Site

Work Area and Pads). The wind turbine tower would occupy an approximately 55-foot by 40-foot permanent gravel surface within the temporary work area.

In conjunction with access road construction, a 65-foot by 55-foot temporary crane pad would be established at each wind turbine site within the 220-foot radius temporary work area. The purpose of the crane pad is to provide enough space for a large assembly crane to safely install the tower sections, nacelle, and blades. The crane pad would be leveled and would have a gravel surface. When construction is complete, the crane pad would be reseeded.

Tower pads would require clearing and leveling for permanent use. The remaining area within the work area would generally not require clearing or grading except as required by local topographic or vegetation conditions. These work areas are expected to experience only moderate disturbance from overland truck travel and turbine equipment set-up, and would be reseeded upon construction completion.

Wind Turbine Tower Foundations

Each proposed wind turbine would be supported by a steel-reinforced concrete foundation. There are several proposed wind tower foundations. The proposed design would use a corrugated metal pipe (CMP) with an approximately 14.3-foot outer diameter and a 10-foot inner diameter, which would be located approximately 32 to 50 feet deep (depending on soils analysis), and would be filled with reinforced concrete and tower anchor bolts. Other possible foundation types include an inverted T-type foundation, a dead man–type foundation, or a pile-type foundation.

On-site excavated materials would be used for backfill for the foundations to the extent possible. Excess excavated materials not used as backfill for the foundations would be used to level low spots on access roads consistent with the surrounding grade. Larger cobbles would be disposed of off-site or crushed at the batch plant or permitted quarry for use as backfill or road material.

Temporarily disturbed areas would be restored using seed mixtures and techniques developed in consultation with BLM.

Wind Turbine Tower Assembly

Following construction of the wind turbine foundation, the wind turbine tower and the nacelle rotor unit would be assembled and erected at each wind turbine site. The staging areas for assembly would be within the 220-foot radius work area (Figure 2-7).

Towers are expected to arrive on site in sections and to be welded/bolted together as the tower is erected (Figure 2-8, Turbine Erection, and Figure 2-9, Aerial View of Preparations to Erect a Wind Turbine Tower).

It is anticipated that very small amounts of paints, lubricants, and grease would be used during wind turbine tower installation.

Transformers

It is anticipated the pad-mounted transformers would be located at the base of each turbine tower. Depending on turbine manufacturer, alternatively, the transformer could be housed in the nacelle. For transformers located at the base of the turbine, the steel-transformer box housing the transformer circuitry would be mounted on a pad or vault made of fiberglass or concrete. The transformer box would be approximately 7-feet-tall by 8-feet-wide, with the concrete pad or foundation approximately 6 to 10 inches thick (Figure 2-12, Typical Pad-mounted Transformer).

Electrical Collection System

Electrical collection system cables would be installed from turbine to turbine in underground trenches. The trenches are typically one to two feet wide and three to four feet deep (Figure 2-13, Typical Underground Collector Cable Trench). In locations where two or more sets of underground lines converge, underground vaults and/or pad-mounted switch panels would be utilized to tie the lines together into one or more sets of larger feeder conductors. Installation of the electrical collection cables would involve disturbance of 14-foot-wide strips along one side of all turbine array access roads and between some of the turbine arrays. The accumulated cables from the individual arrays would be spaced 10 feet apart on either side of the main north-south roads in the “home runs” to the off-site substation.

No new substations would be operated as part of the TWP. Electrical power from the TWP would connect to a substation located on the MWEP, which would interconnect with Southern California Edison’s Whirlwind Substation (Tehachapi Renewable Transmission Project Substation 5) by means of a 220-kV overhead transmission line. A portion of the TWP may also connect to the Whirlwind Substation through the adjacent PWEP.

The electrical collector lines originating from the proposed TWP would connect to an approved substation located on private land across adjacent private parcels entitled for the MWEP and PWEP located adjacent the project site (Figures 2-2 and 2-4). In an effort to avoid any streambed alterations, the electrical system will utilize overhead transmission lines and/or be bored underneath any existing drainages. Typically, overhead electrical collection system cables would be installed only to the extent required to avoid sensitive environmental resources. Poles to support these system cables would not exceed 50 feet in height and would only be used to avoid sensitive streambed crossings. The finalized overhead transmission lines and/or boring plans will be provided upon final engineering design.

After final grading and restoration to approximately original contours, lands would be restored using seed mixtures and techniques developed in consultation with BLM (see Section 4.7, Site Reclamation and Revegetation).

Testing and Calibration

After construction, systems, controls, and safety equipment would be calibrated and tested before being placed in service. Qualified technicians, turbine mechanical and electrical experts, and electricians would test and inspect wind turbine generator components, transformers,

communications systems, and transmission systems to ensure that they comply with required specifications and are working properly.

Site Reclamation and Revegetation

The final phase of construction is cleanup and reclamation of areas temporarily disturbed by construction but not required for facility operations. The following description summarizes minimum requirements for areas disturbed by the construction process. Specific requirements and additional details would be developed as part of the Applicant's Construction Reclamation Plan (See Section 2.4.6, Environmental Plan).

Areas that have been temporarily disturbed by grading or other earth-moving activities would be restored to the original contours of the land to the extent possible and consistent with future operating needs. Reclamation work may consist of recontouring disturbed areas, extending waterbars, creating berms, installing rock barriers, establishing vegetation, and applying mulch to provide additional erosion control. Ungraded areas disturbed only by overland travel would be assessed in coordination with BLM to determine if reclamation is needed for recovery of the area.

Temporary disturbance areas would be revegetated using seed mixtures and techniques developed in consultation with BLM. The Reclamation Plan would include success criteria and monitoring protocols to assess how successful revegetation efforts have been and to determine whether additional reclamation efforts are needed.

After construction, vegetation control may be necessary and would include monitoring and controlling noxious weeds and managing vegetation in and adjacent to all disturbed areas. Vegetation control would consist of manual, mechanical, biological, or chemical methods. If herbicides are used on the site, their application would be conducted according to BLM policies and procedures. Noxious weed control and techniques would continue onsite during the revegetation process according to the specifications stipulated in the Noxious Weed Management Plan developed by the Applicant and approved by BLM.

Upon completion of construction and reclamation, fences, and other previously existing structures would be replaced.

2.2.4 Health and Safety Program

The TWP includes features and practices intended to reduce potential safety issues, such as site security, emergency response procedures, fire control, safe work practices, heavy equipment transportation, traffic management, and others. A health and safety program would be developed to protect both workers and the general public during construction, operation, and decommissioning of the TWP. The Health and Safety Plan developed by the Applicant would incorporate the requirements of the Occupational Safety and Health Administration as applicable to the types of work performed, the location of work, and site conditions.

Site Safety and Security

Warning signs would be posted along the access roads informing the public of construction activities and recommending that the public not enter the site. For areas where public safety risks could exist and site personnel would not be available to control public access (such as excavated foundation holes and electrical collection system trenches), warning signs and temporary fences would be erected. Other areas determined to be hazardous or where issues of security or theft are of concern may also be fenced in coordination with BLM.

If required, security fencing would be installed in accordance with BLM requirements. There is no legal public access to BLM parcels as they currently exist because they are landlocked by private land parcels. To avoid possible injuries to pronghorn antelope, if fencing was required, the fence design would consist of security fencing with a smooth bottom strand wire (i.e., with no barbs) located 18 inches above the ground.

A Site Safety Plan would be developed by the Applicant and approved by BLM for construction of the TWP. The Site Safety Plan would be the general health and safety plan that addresses safety policy, responsibilities and roles of personnel, health and safety for subcontractors, worker safety orientation and training, severe weather conditions, and accident/incident reporting procedures. The Site Safety Plan would also outline employee safe work programs including drug and alcohol policies, hazardous materials, fire protection, respirator use and maintenance, confined workspaces, and potential work hazards such as blood-borne pathogens, electrical dangers, and environmental dangers. The Applicant and/or its general contractor would coordinate with BLM and construction inspection contractors regarding the various components of the Site Safety Plan such as training, reporting, and accidents.

Emergency Response

An Emergency Response Plan would be developed for construction and operation of the TWP by the Applicant. The Emergency Response Plan would detail emergency procedures, including emergency recognition and prevention, organization and personnel responsibilities, emergency alerting procedures, maps and diagrams of the facilities, incident documentation, investigation responsibilities, and post-emergency activities. Specific emergency procedures for medical, severe weather, power outages, and other situations would also be addressed in the Emergency Response Plan.

Fire Safety

A Site Specific Plan for Fire Protection and Prevention would be developed to minimize the potential for a human-caused fire. The plan would address potential fire sources and appropriate safety and fire prevention measures. Project-specific potential fire sources include vehicle exhaust systems, fueling operations, smoking, and on-site flammable liquid storage. Fire suppression, emergency preparedness, and emergency notification and follow-up procedures would also be addressed, and BLM fire guidelines for equipment use and other measures such as carrying fire extinguishers and shovels would be incorporated into the Fire Safety Plan.

Blasting

A Blasting Plan would be developed if project construction requires blasting. The Blasting Plan would detail blasting procedures, including permission and regulations, security and inventory, explosives to be used, and explosive loading processes. Other items detailed in the Blasting Plan would include restrictions on smoking and on operations during thunderstorms, vibration and damage control, warning signals, and initiation of shot and miss-fires.

Transportation Management

Equipment and material hauling would be performed to prevent damage to areas outside the TWP and to minimize interference with normal uses of lands crossed. To this end, a Transportation Management Plan would be developed by the Applicant to address issues specific to transporting turbine components, main assembly cranes, and other large pieces of equipment such as trucks, loaders, various-sized bulldozers, shovels and backhoes, welding rigs, generators, and compressors.

The Transportation Management Plan would describe regional and local access routes and affected roadways, traffic volumes, pavement conditions, and traffic attenuation measures. The plan would explain travel routes for construction materials, current and predicted traffic volumes for access routes during construction, and BMPs for handling traffic along transit routes to the construction sites. The Transportation Management Plan would also identify the process for complying with any state requirements and obtaining necessary permits.

Traffic Management

A separate Traffic Management Plan would be developed by the Applicant that focuses on traffic and circulation primarily within and in the immediate vicinity of the TWP in order to minimize potential hazards from increased truck traffic and worker traffic and to minimize impacts to traffic flow in the vicinity of the TWP. The Traffic Management Plan would provide project-specific information on traffic and circulation in the TWP site, truck traffic volumes, traffic situations, areas of congestion, special traffic concerns, and specific traffic management measures, including informational signs, flaggers when equipment blocks throughways, and traffic cones to identify any temporary changes in lane configuration.

Aviation Safety

The FAA requires aircraft warning markings on all structures taller than 200 feet. The TWP's wind turbine towers would be more than 200 feet in height and therefore, would trigger FAA review. Once the TWP layout is finalized, a project Lighting Plan would be developed by the Applicant using guidance from FAA Technical Note: Developing Obstruction Lighting Standards for Wind Turbine Farms, published by the FAA, November 2005. Aviation warnings for a wind energy project include medium-intensity red strobe warning lights placed on the nacelles of the turbines on each end of a turbine string, as well as on every third or fourth turbine. Once the exact marking plan is developed, it would be submitted to the FAA for review.

The Applicant would submit a Notice of Proposed Construction or Alteration (Form 7460.1) to the FAA for each tower to ensure compliance with FAA regulations (including lighting

regulations) and to avoid potential safety issues associated with air navigation. Upon review, the FAA would issue a determinative notice assessing the hazard potential of the TWP. The FAA would also identify when notification of actual construction is required. A determination of no hazard is anticipated for the TWP based on the issuance of determinations of no hazard for other similarly situated projects.

Grounding

Every wind turbine foundation would have grounding equipment to discharge electrical energy into the earth, in the event that the wind turbine builds up an electrical charge by being struck by lightning or equipment malfunction. The equipment may consist of a copper cable grounding mat cast in place when the base is constructed or some other grounding method specified by the turbine manufacturer and electrical design code.

Other Safety Issues

The TWP is planned to minimize/avoid electromagnetic interference impacts. The TWP would comply with Federal Communications Commission regulations. Studies have been conducted at the project location, and the potential to affect transmissions and/or interference with public safety communication systems (e.g., radio traffic related to emergency activities) is avoided.

Construction Work Force

Direct monthly employment is anticipated to peak at 75 on-site jobs during construction. Aggregate employment over the duration of the construction period would be the equivalent of about 50 full-time jobs for one year.

Construction Water Requirements and Sources

The potable water supply of the adjacent MWEP and/or PWEP would support TWP construction staff without the need for additional potable water. The non-potable construction water supply for the Project was estimated at 27,273 gallons per construction day based on experience with similar projects (Table 2-4, Construction Phase, Estimated Water Supply).

TABLE 2-4
CONSTRUCTION PHASE, ESTIMATED WATER SUPPLY

	Daily Use	Duration	Total Construction Demand	Total Construction Demand
Use	**Gallons**	**Days**	**Gallons**	**Acre-Feet**
Construction	27,273	88	2,400,006	7.3

SOURCE: Heartland Wind LLC, 2014.

2.2.5 Environmental Plan

A comprehensive plan for reducing impacts to environmental resources during construction would be developed for the TWP. The plan would consist of the following elements.

Storm Water Control

A NPDES permit would be obtained for storm water discharges associated with TWP construction activities. As part of the permit, a Storm Water Pollution Prevention Plan would be developed for the site and would comply with the California NPDES General Storm Water Construction Permit, thereby reducing or eliminating potential water quality impacts from unregulated construction-related soil erosion and storm water discharge from the site.

Erosion Control

Erosion control methods may include construction of water diversion structures and site-specific applications of mulch or other water flow dissipation materials as needed to control surface water runoff across disturbed areas. Waterbars would be constructed to the size, spacing, and cross sections to divert water from all erosion-prone areas and to direct drainage away from disturbed areas to established vegetation in sloped areas. Spacing intervals for waterbars would be determined on a site-specific basis. Slope protection would be designed for the particular application required. Mulch would be applied on highly erodible soils and in areas with slopes greater than 15 percent. On steep slopes, hydromulching may be appropriate. Only mulch that has been certified to be weed free would be used. Erosion and sediment control BMPs would be employed during construction in compliance with NPDES General Storm Water Construction Permit requirements.

Dust Control

Dust control and suppression methods would be employed throughout the construction period to protect surface soils from wind erosion and minimize fugitive dust from construction activities, either by watering or by the application of a dust suppressant. In general, water would be used for dust suppression. Water would be trucked in to the construction area.

In the event that additional dust control is necessary, other commercially available dust suppressants may be utilized such as tree resin emulsion products. No major environmental impacts are expected from the potential use of additional dust suppression techniques. Table 2-5, Dust Suppressants and Environmental Considerations, summarizes the dust suppressants that may be used during construction.

TABLE 2-5
DUST SUPPRESSANTS AND ENVIRONMENTAL CONSIDERATIONS

Dust Suppressant	Environmental Considerations
Fresh Water	No environmental hazards.
Tree Resin Emulsions	Produced from pine tree resins and act as a natural adhesive, binding soil particles together.

Noxious Weeds Management

A Noxious Weed Management Plan would be developed by the Applicant for controlling noxious weeds and invasive species that could invade the TWP site as a result of new surface disturbance.

To prevent the introduction of undesirable plant species into disturbed areas, reclamation equipment, including seeding equipment, would be thoroughly cleaned before entering the TWP site. Reclamation efforts would utilize certified weed-free seed (and mulch, if any is used) to prevent the spread of primary noxious weeds.

Hazardous Materials and Hazardous Waste Management

Materials required for construction of the TWP that are classified as hazardous materials[2] would be primarily fuels and lubricants. Hazardous and non-hazardous materials used or stored at the site, including hydraulic fluid, diesel, gasoline, and oil (Table 2-6, Equipment and Materials Brought On-site), would be managed properly, and precautions would be taken to prevent them from entering soils and water. No hazardous materials would be generated by the TWP during the construction phase. Hazardous wastes generated during construction would be removed and disposed of in an appropriately permitted disposal facility.

A Hazardous Materials Management Plan would be developed by the Applicant to address transportation, storage, use, and disposal of hazardous materials expected to be used on the TWP site during construction and operation. No hazardous materials would be stored on lands administered by BLM. Any hazardous materials would be stored at the O&M facilities of the MWEP and PWEP.

TABLE 2-6
EQUIPMENT AND MATERIALS BROUGHT ON-SITE

Location of Hazardous Materials	Types of Hazardous Materials
Equipment staging and maintenance areas	Fuel, lubricating oil, and hydraulic oil from backhoes, bulldozers, water trucks, pickup trucks, support truck equipment, lighting units, pumps, and generators
Fuel staging areas	Bulk storage of gasoline and diesel
Hazardous material staging	containers of lubricants, fuels, and hydraulic oil
Hazardous waste storage	Drums of used oil filter, material used to clean and maintain equipment

SOURCE: Heartland Wind, LLC, 2014

Petroleum Materials and Petroleum Waste Management

Petroleum products such as gasoline, diesel fuel, crankcase oil, lubricants, and cleaning solvents would be present within the TWP during construction. These products would be used to fuel,

2 *Hazardous material* means: (1) Any substance or material defined as hazardous, a pollutant, or a contaminant under CERCLA at 42 U.S.C. 9610(14) and (33); (2) Any regulated substance contained in or released from underground storage tanks, as defined by the Resource Conservation and Recovery Act (RCRA) at 42 U.S.C. 6991; (3) Oil, as defined by the Clean Water Act at 33 U.S.C. 1321(a) and the Oil Pollution Act at 33 U.S.C. 2701(23); or (4) Other substances applicable to Federal, state, tribal, or local law define and regulate as "hazardous" (43 CFR Sec. 2801.5(b).

lubricate, and clean vehicles and equipment and would be transported in containerized trucks or in other approved containers.

Petroleum materials would be properly stored to prevent drainage or accidents. Preventive measures such as the use of vehicle drip pans for overnight parking areas would be used. The construction or maintenance crew foreman would ensure compliance with NPDES General Storm Water Construction Permit guidelines for spill prevention and response. A SPCC Plan has been developed for the TWP to prevent spills and to identify response procedures (40 CFR Part 112). The SPCC Plan, along with secondary containment design, has been conceptually designed in accordance with good engineering practices, would have the full approval of management at a level of authority to commit the necessary resources to fully implement the SPCC Plan, and would meet the requirements stipulated in 40 CFR § 112, Oil Pollution and Prevention.

Enclosed containment would be provided for petroleum wastes, and petroleum-related construction waste would be removed to a disposal facility authorized to accept such materials.

Solid Waste and Sanitary Waste Management

Several types of non-hazardous and non-petroleum construction wastes would be generated during construction of the TWP. “Waste” means all discarded matter, including, but not limited to, trash, garbage, refuse, filters, welding rods, equipment, or human waste. Approved enclosed refuse containers would be used throughout the TWP. Construction waste materials including refuse and trash would be removed from the TWP site and disposed of at a permitted landfill. Portable toilets would be provided for the construction crew, and sanitary waste would be periodically removed by a licensed hauler to an existing municipal sewage treatment facility. A Waste Management Plan would be developed for the TWP by the Applicant.

Reclamation and Revegetation

A Construction Reclamation Plan would be developed by the Applicant for areas disturbed by the construction process. See also Section 2.4.4, Site Reclamation and Revegetation.

2.2.6 Operation and Maintenance

Operations and Maintenance Work Force

Operation of the TWP would require approximately 8 to 12 full-time employees that would operate from O&M facilities constructed on the adjacent approved MWEP and/or PWEP sites. The operations work force would include an on-site facility manager, administrative support, SCADA instrument and wind turbine technicians, and other operations and maintenance personnel. The majority of the employees would be full-time over the calendar year and throughout the anticipated life of the TWP.

Operational Water Requirements and Sources

The estimated water supply for the O&M workforce was estimated based on experience with similar projects (Table 2-7, Operational Phase: Estimated Water Supply). No additional potable water would be used within the TWP because the potable water supply for the O&M facilities of

the adjacent MWEP and/or PWEP is sufficient to support the O&M staffing anticipated for the TWP within the same off-site O&M facility.

TABLE 2-7
OPERATIONAL PHASE, ESTIMATED WATER SUPPLY

	Daily Use (Gallons)	Duration (Days)	Total Annual Use (Gallons)	Total Annual Use (Acre-Feet)
Non-potable	1,958	365	714,816	2
Potable	To be supplied to the project site from commercial vendor. No groundwater from the basin will be used for potable supplies (bottled drinking water for potable demands)			

SOURCE: Heartland Wind, LLC, 2014

Wind Turbine Operations and Maintenance

Routine maintenance of the WTGs would be necessary to optimize performance and to detect potential malfunctions. O&M procedures would be established that define specific routine wind turbine generator maintenance and inspection activities based on the wind turbine generator manufacturer's recommendations.

Transformers would be maintained as part of normal O&M activities.

Periodic inspection and/or maintenance of underground electrical collection lines may be required during the life of the TWP. Maintenance activities would be conducted pursuant to industry standard utility practices.

After the TWP is constructed, commissioned, and deemed operational, no new raw materials would be required for operations. The only materials that would be brought onto the site would be those related to maintenance or replacement of equipment, e.g., nacelle or turbine components and electrical equipment.

Potentially hazardous materials used for operations and maintenance of the WTGs and associated facilities may include mineral oils (turbine lubricant and transformer coolant), synthetic oils (turbine lubricant and gear oil), general lubricants, general cleaners, ethylene glycol (anti-freeze), vehicle fuel, and herbicides for weed control. These materials would be stored at the off-site O&M building.

Safety and Emergency Systems

Safety and emergency systems are incorporated into the design of the WTGs to ensure safe and reliable operation. Key elements of these design features are described below.

Braking System

Electrically actuated individual blade pitch systems act as the main braking system for the wind turbine generator. Braking under normal operating conditions is accomplished by feathering the

blades out of the wind. Any single-feathered rotor blade is designed to slow the rotor, and each rotor blade has its own back-up battery bank to provide power to the electric drive in the event of a grid line loss. The wind turbine generator is also equipped with a mechanical brake located at the output (high-speed) shaft of the gearbox. This brake is only applied immediately on certain emergency stops. This brake also prevents rotation of the machinery as required by certain service activities.

Turbine Control

WTGs can be controlled automatically or manually from either the control panel located inside the nacelle or from a personal computer located in a control box at the bottom of the tower. Control signals also can be sent from a remote computer via a SCADA system, with local lockout capability provided at the turbine controller. Using the tower top control panel, the machine can be stopped, started, and turned out of the wind. Service switches at the tower top prevent service personnel at the bottom of the tower from operating certain systems of the turbine while service personnel are in the nacelle. To override any machine operation, stop buttons located in the tower base and in the nacelle can be activated to stop the turbine in the event of an emergency. All applicable lock out and tag out procedures would be incorporated as required by applicable electrical safety codes.

Tower Access

Access to the nacelle is provided through a tower door that is locked when the turbine is not in service and an internal ladder, and a fall-arresting safety system is included. Interior lights are installed at critical points from the base of the tower to the tower top. Some models of WTGs also include a service lift.

Blade Pitch

Three independent back-up battery packs or hydraulically activated or spring units are provided to power each individual blade pitch system to feather the blades and shut down the machine in the event of a grid line outage or other fault. By having all three blades outfitted with pitch systems, redundancy of individual blade aerodynamic braking capability is provided.

Lightning Protection System

The rotor blades are equipped with a lightning strike sensor mounted in the blade tip. In addition, a solid-copper conductor from the blade tip to root provides a grounding path that leads to the grounding system at the base of the tower foundation. The turbine is grounded and shielded to protect against lightning.

2.2.7 Project Decommissioning

The planned operational life of the TWP is 30 years, but the facility could operate for a longer or shorter period depending on economic or other circumstances. After the 30-year ROW grant term, the TWP would have one year to be decommissioned; unless an extension of the ROW grant is authorized by BLM. A comprehensive Decommissioning Plan would be prepared by the Applicant and put into effect when permanent closure occurs.

Decommissioning is a step-by-step deconstruction process that would involve removing and disposing of the infrastructure and appurtenant facilities associated with the TWP. Many of the activities involved with decommissioning are similar to those performed for construction.

In general, decommissioning of the TWP would involve disassembling the WTGs and associated infrastructure and salvaging valuable equipment, such as wind turbines, towers, electric generators, and materials such as steel, and copper. Salvageable materials would be recycled for future use. Unsalvageable materials would be disposed of at authorized locations. Appurtenant infrastructure from 3 feet below ground to surface, including conductors, cables, and roads, would be removed unless otherwise allowed to remain in place.

Following the removal of the TWP facilities, the site would undergo final cleanup and reclamation. Turbine foundations would be removed to 3 feet below grade, and turbine and crane pads and site access roads would be removed, recontoured, and reseeded, in accordance with BLM BMPs. Areas disturbed during removal of TWP components would be restored and rehabilitated to their original condition to the greatest extent feasible and would be available for the same uses that existed prior to construction of the TWP.

2.3 Alternative 2: Modified Proposed Action (37 WTGs)

Alterantive 2 is similar to the Proposed Action (Alternative 1), but eliminates the southwest 94-acre parcel from the project, resulting in 3 fewer WTGs. Alternative 2 would consist of 37 WTG and generate up to 55.5 MW of electricity. The electrical collection system, access roads, and SCADA system associated with the 3 eliminated WTGs would also not be constructed under Alternative 2. The site plan for Alternative 2 is provided in Figure 2-14.

The southwest 94-acre parcel was selected for elimination in Alternative 2 to avoid impacts to the Pacific Crest Trail (see Sections 3.18 Visual Resources and 4.18 Visual Resources). This elimination also potentially results in fewer biological, cultural and other impacts while maintaining a contiguous footprint for development.

Like the Proposed Action, Alternative 2 involves an amendment to the CDCA plan. Under Alternative 2, the CDCA plan would be amended to identify the area as suitable for wind energy development and to allow construction and operation of the TWP.

Construction of Alternative 2 would utilize the same equipment and materials as the Proposed Action; however, less material would be required due to the reduction in the number of WTGs. Construction of this alternative would be completed in approximately the same amount of time as the Proposed Action, which is approximately 4 months. Land disturbance would be reduced because 3 fewer turbine foundations/crane pads would be required and fewer access roads and collector lines would be needed. Table 2-8 provides the total acres of permanent and temporary disturbance associated with Alternative 2.

TABLE 2-8
LAND DISTURBANCE FOR ALTERNATIVE 2

Component	Temporary Disturbance	Permanent Disturbance
Wind Turbine Tower Pads(55 by 40 feet permanent turbine pad, within a 220 feet radius temporary work area)	128.9 Acres	1.9 Acres
Electrical Collection System (14-feet on one side of access road)	40,451 feet 13.0 Acres	0
Access Roads (20 feet wide permanent travel width, with 8 feet wide temporary shoulders on each side of road)	45,635 feet 16.7 Acres	45,635 feet 20.9 Acres
Fiber Optic Cable	Within electrical collection system disturbance	
Material Storage/Staging/ Laydown Areas	N/A	N/A
Concrete Batch Plant	N/A	N/A

2.4 Alternative 3 - No Action Alternative

In accordance with 40 CFR Section 1502.14(d), BLM is required to evaluate a no action alternative. Under Alternative 3, the no action alternative, BLM would deny the proposed TWP and would not amend the CDCA Plan. As a result, no wind energy project would be constructed, 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 wind project approved for the site under this alternative, no new structures or facilities would be constructed or operated on the site and no new ground disturbance would occur. The land on which the project is proposed would become available to other uses that are consistent with the CDCA Plan. The mandates discussed in BLM's Purpose and Need, including Executive Order 13212, Secretarial Order 3285A1 as amended, and the Energy Policy Act 2005 (EPAct) would not be furthered under the no action alternative.

2.5 Alternative 4: No Project; Unsuitable

Under Alternative 4, BLM would deny the proposed TWP and would amend the CDCA Plan to find the proposed site unsuitable for wind energy development. As a result, no wind energy project would be constructed on the site. BLM would continue to manage the site consistent with the existing land use designation in the CDCA but would specifically exclude any future wind energy development on the site. Under this alternative, impacts would be similar to those described for Alternative 3; however, with the amendment to the CDCA Plan as unsuitable other future potential uses on the site would not include wind energy generation.

2.6 Alternative 5: No Project; Suitable

Under Alternative 5, BLM would deny the proposed TWP, but would amend the CDCA Plan to find the site suitable for wind energy development. BLM would continue to manage the site

consistent with the existing land use designation in the CDCA with such described amendments. With a designation as suitable for wind energy development , it is possible that another wind energy project could be constructed on the site in the future and potential impacts as described for the Proposed Action and Alternative 2 could potentially occur at a later time. While different wind technologies require different amounts of grading, it is expected that all wind technologies would require grading and maintenance similar to the Proposed Action. The impacts of such future projects however is speculative at this time.

2.7 Preferred Alternative

The "preferred alternative" is a preliminary indication of the federal responsible official's preference of action, which is chosen from among the Proposed Action and alternatives. The preferred alternative may be selected for a variety of reasons (such as the priorities of the particular lead agency) in addition to the environmental considerations discussed in the EIS. In accordance with NEPA (40 CFR 1502.14(e)), BLM has identified the preferred alternative as Alternative 1, the Proposed Action.

2.8 Alternatives Considered but Eliminated from Detailed Analysis

Other alternative sites, technologies and methods discussed below were considered by BLM but eliminated from detailed analysis under NEPA. These alternatives were eliminated from detailed analysis based on one or more of the reasons set forth below:

(1) It would not respond to BLM's purpose and need for the Project

(2) It is technologically or economically infeasible or legally impermissible;

(3) It would cause greater environmental impacts than the alternatives analyzed in detail;

(4) Its implementation is remote or speculative.

This process for eliminating these alternatives from detailed analysis complies with 40 CFR 1502.14(a), and BLM IM 2011-059. It is described briefly in the following sections.

2.8.1 Private Land Alternative

Private lands within Kern County were considered for siting the proposed wind energy facility. Although BLM has no jurisdiction over the siting of the project on private land, the use of private lands was considered, and Kern County would have discretionary authority to approve a wind energy facility proposed on private land within unincorporated Kern County.

Kern County contains the Tehachapi Wind Resource Area. According to the Kern County General Plan, wind energy development in the Tehachapi Mountains is one of the State's largest, responsible for about 40 percent of the State's total wind-generated power. Private lands large enough to accommodate the Proposed Action within "Good" or better wind resource areas exist in the Kern County Wind Resource Area, but most of those lands are already subject to approved

or proposed wind projects or are located in more environmentally sensitive mountainous areas to the north.

A potential private lands site was identified approximately three miles southeast of the proposed action, directly adjacent to the eastern boundary of the approved PWEP, but otherwise untouched by wind projects on its three remaining sides. This site consists of approximately 175 parcels totaling approximately 1,233 acres and owned by approximately 100 separate owners. The wind speeds at the private lands site are lower than the wind speeds at the proposed project site.

The private lands alternative was eliminated from detailed discussion because it does not respond to BLM's purpose and need for the Proposed Action, namely, to consider an application for the authorized use of public lands for a wind energy generation facility in compliance with FLPMA, nor would it respond to BLM's objective to develop utility scale renewable energy projects. The private lands alternative is also technically and economically infeasible, due to: (1) the limited number of available sites, (2) the quality of the wind resource there, and (3) the need to aggregate numerous parcels owned by numerous separate individuals. It would be difficult and expensive, if not impossible, to acquire sufficient contiguous acreage for the project, and the wind speeds at the site are too low to make the project economically feasible under current technologies. Finally, the private lands alternative would have substantially similar effects to a public lands project, or possibly greater effects due to its expansion of the overall footprint of wind development in the Tehachapi Wind Resource Area without the benefit of the impact reductions and economies of scale associated with strategic "infill" development designed to fill gaps in existing projects.

2.8.2 Alternative BLM-Administered Land

Potential project sites on alternative BLM-administered land within the Tehachapi Wind Resource Area were considered for siting the proposed wind energy facility. However, most potentially suitable BLM-administered lands in the Tehachapi Wind Resource Area are precluded or otherwise infeasible as discussed below.

BLM-administered parcels to the north of the proposed project site are in use or are subject to first-in-time ROW applications by other wind project applicants that have demonstrated due diligence in perfecting their applications and would take priority over the project. BLM-administered lands to the north of the proposed project site are also located in more environmentally sensitive mountainous areas. Wind development of BLM-administered parcels to the west of the proposed project site is precluded due to land use conflicts with existing radar installations. Potential "infill" BLM-administered lands located to the east of the proposed project site (in the middle of the Avalon private lands project) are precluded by land use conflicts with pre-existing hazardous mine tailings. BLM-administered parcels to the south of the proposed project site possess lower wind speeds and are less suitable for wind development under current technologies.

Moreover, most of the above-mentioned BLM-administered parcels are isolated and are not surrounded by existing projects. In addition to WTGs, electrical collection lines, access roads, a SCADA system and fencing, development of such parcels would require a new interconnection generation tie line, a substation, material storage and laydown yards, and an O&M building as

those sites do not present an opportunity to utilize shared ancillary facilities presented by the proposed Project site. Additionally, most such public land parcels are too small to justify development on a stand-alone basis without shared ancillary facilities and would not "fill in" gaps between or within other wind projects. Even if economically feasible, the use of such alternative BLM-administered lands would likely have greater effects than the proposed project due to the lack of shared ancillary facilities and the impact reductions associated with "infill" development.

The use of alternative BLM-administered land was eliminated from further discussion because it is technically infeasible: most of the suitable, BLM-administered land in the region is already subject to first-in-time ROW applications by other wind project applicants, is located in environmentally sensitive mountainous areas, is subject to land use conflicts, or otherwise has wind resource values too low for economically feasible wind energy production under current technologies. Other limitations include the added impacts and costs associated with the separate stand-alone ancillary facilities for such sites. The alternate public land sites would also potentially require s re-start of the CAISO interconnection process. Finally, this alternative would have substantially similar effects to a public lands project, or possibly greater effects due to the lack of shared ancillary facilities and the lack of impact reductions associated with "infill" development.

2.8.3 Other Types of Energy Projects

For renewable energy ROWs, there are many different types of alternatives that are considered by BLM and the Applicant during pre-application activities and that are suggested to BLM by external parties through scoping. These alternatives include solar, geothermal, biomass, tidal, and wave energy. Traditional sources of energy could also be considered, which include coal, natural gas, and nuclear energy. Such alternatives were not carried forward by BLM because they do not respond to the Agency's purpose and need for the Proposed Action which is to respond to a ROW application for a wind energy generation facility on public lands. Each of these alternative technologies not carried forward for analysis are addressed in Table 2-9 below.

2.8.4 Distributed Generation

Another alternative raised by the public is distributed generation. Distributed generation refers to the installation of small-scale solar energy facilities at individual locations at or near the point of consumption (e.g., use of solar PV panels on a business or home to generate electricity for on-site consumption). Distributed generation systems typically generate less than 10,000 kW.

As discussed in BLM's Final Programmatic Environmental Impact Statement (Final Solar PEIS) for Solar Energy Development in Six Southwestern States (BLM 2012), 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 (BLM 2012). For a variety of reasons (e.g., upper limits on integrating distributed generation into the electric grid, cost, lack of electricity storage in most systems, and continued dependency of buildings on grid-supplied power), distributed solar energy generation alone cannot meet the goals for renewable energy development. For example, the present electric grid was not designed to handle high loads of distributed renewable energy

systems. Ultimately, both utility-scale renewable energy development (both solar and wind) and distributed generation solar power will need to be deployed at increased levels, and the highest penetration of solar power overall will require a combination of both types (BLM 2012).

It is important to note that BLM has no authority or influence over the installation of distributed generation systems, other than on its own lands, which BLM is currently evaluating through other initiatives separate from this Proposed Action. In addition, the Energy Policy Act of 2005 set for the sense of Congress that the Secretary of the Interior should approve 10,000 MWs of electricity from non-hydropower renewable energy projects located on public lands. Given the current state of technology, only utility-scale renewable energy generation projects are reasonable alternatives to achieve that level of production. Based on these considerations and the fact that distributed generation does not respond to BLM's purpose and need to respond to a ROW application for a wind energy generation facility on public lands, a distributed generation alternative was not carried forward for detailed analysis in this Draft EIS.

CHAPTER 3
Affected Environment

3.1 Introduction

Chapter 3 describes the resources, resource uses, special designations, and other important topics (including public health and safety, social and economic considerations, and environmental justice conditions) that may be impacted by the proposed Tylerhorse Wind Project (TWP). "Resources" include air, climate change, soil, water, vegetative communities, wild horses and burros, wildlife and plant species, wildland fire ecology and management, as well as cultural, paleontological, and visual resources. "Resource uses" include livestock grazing, minerals, recreation, transportation and public access, and lands and realty. "Special designations" include areas of critical environmental concern (ACECs), wilderness areas (WAs), and wilderness study areas (WSAs).

Information and data used to prepare this chapter were obtained from the CDCA Plan, various BLM planning and NEPA documents, the Kern County General Plan, and the Mojave Specific Plan. Information and data were also collected from many other related planning documents and research publications prepared by various federal, State, and local agencies, as well as from private sources pertaining to key resource conditions and resource uses found within the project area. The purpose of this chapter is to provide a description of affected resources and resource uses within the existing environment of the project area, which will be used as a baseline to evaluate and assess the direct, indirect, and cumulative impacts of the Proposed Action and alternatives described in Chapter 2. Descriptions and analyses of the impacts themselves are presented in Chapter 4, Environmental Consequences.

3.2 Air Resources

This section provides an overview of the existing air quality at the project site and surrounding region, and the applicable regulatory framework. The discussion provided in this section is based on the information provided in the *Tylerhorse Wind Energy Project Air Quality Impact Technical Report*, March 2014, prepared by Sapphos Environmental, Inc, (see Appendix H) and updated where applicable.

3.2.1 Existing Conditions

The Tylerhorse Wind Project (TWP or Proposed Action) site is located in the Mojave Desert Air Basin (MDAB), which is composed of a 21,000-square-mile area encompassing the majority of San Bernardino County, the eastern portion of Kern County, the eastern portion of Riverside County, and the northeastern portion of Los Angeles County. The analysis of existing conditions related to air quality summarizes pollutant levels that exist prior to implementation of each component of the Proposed Action. All components of the Proposed Action are located within the MDAB; therefore, all air quality data and analysis are presented as an aggregate of the entire Proposed Action property. The MDAB is composed of four air districts: the Eastern Kern Air Pollution Control District (EKAPCD), the Antelope Valley Air Quality Management District (AVAQMD), the Mojave Desert Air Quality Management District (MDAQMD), and the eastern portion of the South Coast Air Quality Management District (SCAQMD). The Proposed Action property falls within the jurisdictions of the EKAPCD. The climate in the MDAB is characterized by hot, dry summers; mild winters; infrequent rainfalls; moderate- to high-wind episodes; and low humidity. The majority of the MDAB is relatively rural and sparsely populated. The MDAB contains many mountain ranges interspersed with long, broad valleys that often contain dry lakes. The Sierra Nevada Mountains provide a natural barrier to the north, preventing cold air masses from Canada and Alaska from moving down into the MDAB. Prevailing winds in the MDAB are out of the west and southwest, caused by air masses pushed onshore in Southern California by differential heating and channeled inland through mountain passes. During the summer months, the MDAB is influenced by the Eastern Pacific High-Pressure Area (a semi-permanent feature of the general hemispheric circulation pattern), which inhibits cloud formation and encourages daytime solar heating. The San Gabriel and San Bernardino mountain ranges block the majority of cool, moist costal air from the south, so the MDAB experiences infrequent rainfalls.

Average temperature and precipitation data within the Proposed Action property and the vicinity have been recorded at the Mojave Monitoring Station (located approximately 16 miles northeast of the Proposed Action property at latitude 35° 03’ North, longitude 118° 10’ West). From 1904 to 2010, the annual average temperature recorded in the Proposed Action property was 62.9 degrees Fahrenheit (°F), with an average winter (December, January, and February) temperature of approximately 46.8°F, and an average summer (June, July, and August) temperature of approximately 80.9°F. The annual average of total precipitation in the Proposed Action property is approximately 6 inches, which occurs mostly during the winter, and relatively infrequently during the summer. Precipitation averages approximately 3.3 inches

during the winter (December, January, and February), approximately 1.3 inches during the spring (March, April, and May), approximately 1.0 inch during the fall (September, October, and November), and approximately 0.3 inch during the summer (June, July, and August) (Appendix H). The average wind speed within the Proposed Action property and its vicinity, as recorded at the Mojave Monitoring Station from 2002 to 2004, was approximately 10 miles per hour (MPH), originating predominantly from the northwest (Appendix H). Severe weather is uncommon in the MDAB, but strong easterly winds known as the Santa Ana winds can cause 38 to 63 MPH wind gusts below the passes and canyons. During the spring and summer months, air pollution is moved into the region through mountain passes or is lifted by the warm vertical currents produced by the heating of the mountain slopes. From the late summer through the winter months, due to the average lower wind speeds in the Proposed Action property and its vicinity, air contaminants do not readily disburse, thus trapping air pollutions in the area.

Existing Air Quality

Eleven air monitoring stations serve the MDAB. The two closest monitoring stations to the Proposed Action property are the Mojave Monitoring Station, located approximately 16 miles northeast of the Proposed Action property at 923 Poole Street, Mojave, California, 93501, and the Lancaster–Division Street Monitoring Station, located approximately 25 miles southeast of the Proposed Action property at 43301 Division Street, Lancaster, California, 93535.
Table 3.2-1 presents a three-year summary of air quality data collected at the monitoring stations for ozone and particulate matter. Table 3.2-1 also includes a comparison of monitored air pollutant concentrations with the state and national ambient air quality standards. Together, these data establish the baseline conditions for purposes of air quality in and around the project site.

Sensitive Receptors

Land uses such as schools, hospitals, and convalescent homes are considered to be relatively sensitive to poor air quality because infants and children, the elderly, and people with health afflictions, especially respiratory ailments, are more susceptible to respiratory infections and other air-quality-related health problems than the general public. Residential areas are also considered to be sensitive to air pollution because residents (including children and the elderly) tend to be at home for extended periods of time, resulting in sustained exposure to any pollutants present.

TABLE 3.2-1
AIR QUALITY DATA SUMMARY (2010–2012)

Pollutant	Monitoring Data by Year			
	Standard[a,b]	2010	2011	2012
Ozone – Mojave Poole Street				
Highest 1 Hour Average		0.092	**0.101**	**0.096**
Days over State Standard	0.09 ppm	0	2	1
Highest 8 Hour Average		**0.084**	**0.092**	**0.087**
Days over National Standard	0.075 ppm	3	20	29
Days over State Standard	0.070 ppm	21	43	55
Particulate Matter (PM_{10}) – Mojave Poole Street				
Highest 24 Hour Average – State Measurement		49.0	**79.4**	**96.6**
Days over State Standard	50 $\mu g/m^3$	0	18	18
Highest 24 Hour Average - National Measurement		**52.8**	**35.7**	*****
Days over National Standard	150 $\mu g/m^3$	0	0	*
Particulate Matter ($PM_{2.5}$) – Mojave Poole Street				
Highest 24 Hour Average – National Measurement		10	28.0	**67.7**
Days over National Standard	35 $\mu g/m^3$	0	0	2.1
State Annual Average	12 $\mu g/m^3$	*****	*****	6.6
Carbon Monoxide (CO) – Lancaster Division Street				
Maximum 8 Hour Concentration		**1.23**	**1.33**	**1.00**
Days over National Standard	9 ppm	0	0	0
Days over State Standard	9 ppm	0	0	0
Nitrogen Dioxide (NO 2) – Lancaster Division Street				
High 1 Hour Average – State Measurement		**56.0**	**58.0**	**49.0**
Days over State Standard	60 ppm	0	0	0
Highest 1 Hour Average – National Measurement		**56.0**	**58.0**	**49.0**
Days over National Standard	*	0	0	0

NOTES: Values in **bold** are in excess of at least one applicable standard. NA = Not Available.

a. Generally, state standards and national standards are not to be exceeded more than once per year.

b. ppm = parts per million; μg/m3 = micrograms per cubic meter.

* insufficient data available to determine the value.

SOURCE: California Air Resources Board (CARB), 2013. *Summaries of Air Quality Data*, 2009 through 2011; http://www.arb.ca.gov/adam/topfour/topfour1.php, accessed April 2, 2014.

3.2.2 Applicable Regulations, Plans, and Standards

Federal

The Federal Clean Air Act (FCAA) requires USEPA to identify National Ambient Air Quality Standards (NAAQS or national standards) to protect public health and welfare. National standards have been established for ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, PM_{10}, $PM_{2.5}$, and lead. The information below shows the current national and state ambient air quality standards

and provides a brief discussion of the related health effects and principal sources for each pollutant.

Criteria Air Pollutants

Ozone

Short-term exposure to ozone (O_3) can irritate the eyes and cause constriction of the airways. Besides causing shortness of breath, ozone can aggravate existing respiratory diseases such as asthma, bronchitis, and emphysema.

Ozone, the main component of photochemical smog, is primarily a summer and fall pollution problem. O_3 is not emitted directly into the air but is formed through a complex series of chemical reactions involving other compounds that are directly emitted. These directly emitted pollutants (also known as ozone precursors) include reactive organic gases (ROG) and nitrogen oxides (NOx). The time period required for O_3 formation allows the reacting compounds to spread over a large area, producing a regional pollution problem. O_3 problems are the cumulative result of regional development patterns rather than the result of a few significant emission sources.

Once formed, O_3 remains in the atmosphere for one or two days. O_3 is then eliminated through reaction with chemicals on the leaves of plants, attachment to water droplets as they fall to earth ("rainout") and absorption by water molecules in clouds that later fall to earth with rain ("washout").

Carbon Monoxide (CO)

CO is a primarily a byproduct of motor vehicle exhaust, which contributes more than two-thirds of all CO emissions nationwide. In cities, automobile exhaust can cause as much as 95 percent of all CO emissions. These emissions can result in high concentrations of CO, particularly in local areas with heavy traffic congestion. Other sources of CO emissions include industrial processes and fuel combustion in sources such as boilers and incinerators.

Nitrogen Dioxide (NO_2) and Nitrogen Oxides (NOx)

Nitrogen dioxide is a reddish brown, highly reactive gas that is formed in the ambient air through the oxidation of nitric oxide. NOx, the generic term for a group of highly reactive gases that contain nitrogen and oxygen in varying amounts, plays a major role in the formation of ozone, particulate matter (PM), and acid rain. NOx emissions result from high-temperature combustion processes such as vehicle exhaust emissions and power plants. The majority of the NOx emitted from combustion sources is in the form of NO, while the balance is mainly NO_2. NO is oxidized by O_3 in the atmosphere to NO_2 but some level of photochemical activity is needed for this conversion. Home heaters and gas stoves can also produce substantial amounts of NO_2 in indoor settings.

Particulate Matter (PM)

PM pollution consists of very small aerosol and solid particles floating in the air. PM is a mixture of materials that can include smoke, soot, dust, salt, acids, and metals. Some PM, such as pollen, is naturally occurring. PM also forms when gases emitted from motor vehicles and industrial sources undergo chemical reactions in the atmosphere. The U.S. Environmental Protection Agency (USEPA) currently regulates two types of PM emissions, PM_{10} and $PM_{2.5}$. PM_{10} refers to particles less than or equal to 10 microns in diameter and $PM_{2.5}$ refers to particles less than or equal to 2.5 microns in diameter.

Respirable particulate matter, or PM_{10}, can be emitted directly or it can be formed many miles downwind from emission sources when various precursor pollutants interact in the atmosphere. Gaseous emissions of pollutants like NOx, sulfur oxides (SOx), VOC, and ammonia, given the right meteorological conditions, can form PM in the form of nitrates (NO_3), sulfates (SO_4), and organic particles. These pollutants are known as secondary particulates, because they are not directly emitted, but are formed through complex chemical reactions in the atmosphere.

Fine particulate matter, or $PM_{2.5}$, is derived mainly from either the combustion of materials, or from precursor gases (SOx, NOx, and VOC) through complex reactions in the atmosphere. $PM_{2.5}$ consists mostly of sulfates, nitrates, ammonium, elemental carbon, and a small portion of organic and inorganic compounds.

Sulfur Dioxide (SO_2)

Sulfur dioxide is typically emitted as a result of the combustion of a fuel containing sulfur. Fuels such as natural gas contain very little sulfur and consequently have very low SO_2 emissions when combusted. By contrast, fuels high in sulfur content such as coal or heavy fuel oils can emit very large amounts of SO_2 when combusted. Sources of SO_2 emissions come from every economic sector and include a wide variety of fuels, gaseous, liquid and solid.

Pursuant to the 1990 Federal Clean Air Act Amendments (FCAAA), USEPA classifies air basins (or portions thereof) as “attainment” or “nonattainment” for each criteria air pollutants, based on whether or not the NAAQS had been achieved. Table 3.2-2 shows the current attainment status of the Proposed Action vicinity.

Regulation of TACs, termed Hazardous Air Pollutants (HAPs) under federal regulations, is achieved through federal, State and local controls on individual sources. The 1977 Clean Air Act Amendments required USEPA to identify National Emission Standards for Hazardous Air Pollutants (NESHAPs) to protect public health and welfare. These substances include certain volatile organic chemicals, pesticides, herbicides, and radionuclides that present a tangible hazard, based on scientific studies of exposure to humans and other mammals. There is uncertainty in the precise degree of hazard for these substances.

TABLE 3.2-3
EASTERN KERN COUNTY ATTAINMENT STATUS

Pollutant	Designation/Classification	
	Federal Standards	State Standards
Ozone – one hour	No Federal Standard[1]	Nonattainment/Moderate
Ozone – eight hour	Nonattainment/Marginal	Nonattainment
PM10	Nonattainment/Serious	Nonattainment
PM2.5	Attainment/Unclassified	Unclassified
CO	Attainment/Unclassified	Unclassified
Nitrogen Dioxide	Attainment/Unclassified	Attainment
Sulfur Dioxide	Unclassified	Attainment
Lead	No Designation / Classification	Attainment
Hydrogen Sulfide	No Federal Standard	Unclassified
Sulfates	No Federal Standard	Attainment
Visibility Reducing Particles	No Federal Standard	Unclassified

[1] Federal One Hour Ozone National Ambient Air Quality Standard was revoked on June 15, 2005

SOURCE: CARB, 2012b.*Area Designation Maps* http://www.arb.ca.gov/desig/adm/adm.htm, page last reviewed May 8, 2012 and accessed March 25, 2013; USEPA, 2012. *Green Book – Criteria Pollutant Area Summary Report*, http://www.epa.gov/air/oaqps/greenbk/ancl2.html, accessed March 25, 2013

General Conformity Rule

The EPA has authority over SIP general conformity in areas that do not meet federal air quality standards, and the federal land managers have review authority over any new projects that may affect federal Class I areas, as defined in 40 CFR, Part 51.166; 40 CFR, Part 51, Subpart W; and 40 CFR, Part 93, Subpart B: General Conformity. These regulations ensure that federal actions conform to state and local plans for attainment. As a federal lead agency, the Bureau of Land Management (BLM) must complete a conformity determination for the proposed action before it can be approved. The General Conformity Rule prohibits federal agency approval of activities that conflict with an applicable implementation plan. When applicable, a program for mitigating effects must be developed. The proposed action requires a right-of-way (ROW) across BLM lands, thus triggering the National Environmental Policy Act (NEPA) and the BLM's involvement in the NEPA process. Additionally, the BLM is involved in the conformity determination if emissions would exceed the applicability (*de minimis*) threshold for each nonattainment pollutant as described in the General Conformity Rule. The General Conformity Rule was designed to require federal agencies to ensure that projects conform to the applicable SIP. General Conformity regulations apply only to direct and/or indirect emissions for a proposed action that occurs in areas designated as non-attainment or maintenance areas. The BLM is required to analyze emissions from the project to determine if the General Conformity Rule applies. If the project is subject to General Conformity, then the BLM would prepare a General Conformity Determination for public comment. The General Conformity Determination would outline the methodology by which project emissions would conform to the SIP, such as:

1. Emissions would be specifically identified and accounted for in the SIP; and

2. Emissions would be fully offset, or there would be a similarly enforceable measure that reduces emissions so that there would be no net increase in emissions.

As shown in Table 3.2-3, the portion of the MDAB where the proposed action would occur is designated as serious non-attainment and marginal non-attainment of the federal PM_{10} and ozone standards, respectively. The emissions of these pollutants would need to be analyzed for each corresponding non-attainment area/maintenance area to determine applicability to the General Conformity Rule. The applicable *de minimis* levels for ozone are 100 tons per year NOx and 50 tons per year VOC. For PM_{10}, 70 tons per year is the applicable *de minimis* level (USEPA, 2011). As described in Section 4.2 (Air Resources) of this EIS, the TWP would not exceed these *de minimis* thresholds and a General Conformity Determination would not be required.

BLM California Desert Conservation Area Plan

The CDCA Plan contains provisions and guidance for public land use management in the California Desert District under the BLM's jurisdiction. Since its first date of publication in 1980, the CDCA Plan has been amended in order to incorporate public concerns and congressional mandates in regard to the use of desert resources, such as the provisions of the California Desert Protection Act of 1994. The CDCA Plan also specifies that the Federal Land Policy and Management Act and the CAA of 1977, along with Executive Order 12088 of 1978, "Federal Compliance with Pollution Control Standards," require the BLM and other federal land-management agencies to preserve and protect air quality– related values on federal lands. The CDCA Multiple Land Use Class Guidelines require that all land uses within the CDCA be managed to protect air quality and visibility, in accordance with the Class II objectives of Part C of the CAA Amendments, unless they are designated another class by the State of California as a result of the BLM air quality management plan recommendations. Additionally, the CDCA Plan considers air quality monitoring as a key parameter in programs established in the CDCA Plan elements related to wildlife and energy production and utility corridors, as well as one of the support requirements for implementation.

BLM West Mojave Plan

The West Mojave Plan (WEMO) is an amendment to the CDCA Plan that establishes strategies to conserve and protect sensitive species in the planning area, such as desert tortoise (Gopherus agassizii), Mohave ground squirrel (Spermophilus mohavensis), and other sensitive plants and animals. The West Mojave Plan identifies emissions of PM_{10} as the most important air pollutant in the planning area.

State

The California Air Resources Board (CARB) has established California Ambient Air Quality Standards (CAAQS or State standards) for many of the same pollutants covered under the NAAQS that are as stringent as or more stringent than the NAAQS. Pollutants regulated under these standards include O_3, NO_2, CO, PM_{10}, $PM_{2.5}$, SO_2, lead, sulfates, hydrogen sulfide, vinyl chloride,

and visibility reducing particles. Table 3.2-2 shows the current CAAQS for some of these pollutants and Table 3.2-3 depicts the current attainment status of the Proposed Action vicinity.

CARB also has on-road and off-road engine emission reduction programs that indirectly affect the project's emissions through the phasing in of cleaner on-road and off-road equipment engines. Additionally, CARB has a Portable Equipment Registration Program that allows owners or operators of portable engines and associated equipment to register their units under a statewide portable program to operate their equipment, which must meet specified program emission requirements, throughout California without having to obtain individual permits from local air districts.

The State has also enacted a regulation for the reduction of diesel particulate matter (DPM) and criteria pollutant emissions from in-use off-road diesel-fueled vehicles (CCR Title 13, Article 4.8, Chapter 9, Section 2449). This regulation provides target emission rates for PM and NOx emissions from owners of fleets of diesel-fueled off-road vehicles and applies to equipment fleets of three specific sizes and the target emission rates are reduced over time.

Local

Eastern Kern APCD Rules and Regulations

The EKAPCD has primary responsibility for regulating stationary sources of air pollution situated within its jurisdictional boundaries. To this end, the EKAPCD implements air quality programs required by State and federal mandates, enforces rules and regulations based on air pollution laws, and educates businesses and residents about their role in protecting air quality. The EKAPCD is also responsible for managing and permitting existing, new, and modified sources of air emissions within the Mojave Desert portion of Kern County and also established the following rules and regulations to ensure compliance with local, State, and federal air quality regulations:

1. Rule 201. This rule establishes permitting requirements for stationary sources.

2. Rule 210.1. This rule establishes stationary source offset levels for new and modified stationary sources of air pollutants. Under this rule, the EKAPCD has established required offsets for when the emissions from a source exceed the following trigger levels:

    a. PM10 - 15 tons/year

    b. VOCs - 25 tons/year

    c. NOx (as NO_2) - 25 tons/year

    d. SOx – 27 tons/year

3. Rule 210.7 Federal General Conformity Rule. This rule adopts the provisions of 40 CFR, Chapter I, Subchapter C, Parts 6 and 51, related to the requirements for preparation, adoption, and submittal of implementation plans and procedures for implementing NEPA. This rule sets forth policy, criteria, and procedures for demonstrating and ensuring

conformity of general federal actions in non-attainment and maintenance areas under the applicable implementation plan. Since the site would be located in a designated federal non-attainment area for ozone and PM10, the BLM, as lead agency under NEPA, must make a conformity determination stating that the proposed action conforms to the applicable State Implementation Plan (SIP) before the action is taken.

4. Rule 401. This rule states that a person shall not discharge into the atmosphere, from any single source of emissions whatsoever, any air contaminant for a period or periods aggregating more than three minutes in any one hour which is:

    a. As dark or darker in shade as that designated as No. 1 on the Ringelmann Chart, as published by the U.S. Bureau of Mines, or

    b. Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke described in Subsection A [of the Rules].

5. Rule 402. This rule addresses significant man-made dust sources from large operations. A large operation is defined as "any active operation, including vehicle movement on unpaved roadways, on property involving in excess of 100 contiguous acres of disturbed surface area, or any earth-moving activity exceeding a daily volume of 7,700 cubic meters (10,000 cubic yards) three times during the most recent 365-day period." Rule 402 applies to specified bulk storage, earthmoving, construction and demolition, and man-made conditions resulting in wind erosion, and includes the following requirements:

    a. A person shall not cause or allow emissions of fugitive dust from any active operation to remain visible in the atmosphere beyond the property line of the emission source, excluding unpaved roadways.

    b. A person shall utilize one or more Reasonably Available Control Measures to minimize fugitive dust emissions from each source type that is part of any active operation, including unpaved roadways.

    c. A person shall not cause or allow downwind PM10 ambient concentrations to increase more than 50 micrograms per cubic meter above downwind concentrations as determined by simultaneous upwind and downwind sampling utilizing high-volume particulate matter samplers, or other EPA-approved equivalent method(s).

    d. No person shall conduct a large operation without either: (1) conducting on-site PM10 air quality monitoring and associated recordkeeping; or (2) filing for and obtaining an approved fugitive dust emission control plan.

6. Rule 404.1. This rule applies to any person who discharge particulate matter emissions into the atmosphere from any single source operation and states:

a. Particulate matter emissions shall not exceed 0.1 grain per standard cubic foot of gas at standard conditions (gr/scf).

7. Rule 419. This rule states that a person shall not discharge from any source whatsoever such quantities of contaminants or other material that cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public or that endanger the comfort, repose, health, or safety of such persons or the public or that cause or have a natural tendency to cause injury or damage to business or property.

Kern County General Plan

Air Quality Element

The Proposed Action property is located within Kern County, and development in the area is governed by the policies, procedures, and standards set forth in the Kern County General Plan. The Proposed Action is considered a capital facility for Kern County; therefore, pursuant to Office of Planning and Research (OPR) guidelines for a general plan related to capital facilities, the Proposed Action must be consistent with the Kern County General Plan. In addition, capital improvement programs are required to be reviewed annually to ensure their consistency with the Kern County General Plan. The Proposed Action would be expected to be consistent with the air quality regulations of the Kern County General Plan, and would not be expected to result in a change to the population growth assumption used by the Kern Council of Governments for attainment planning. The Kern County General Plan has developed goals and policies for improving air quality in Kern County. The implementation measures that are relevant to the Proposed Action and that are capable of contributing toward prevention and mitigation of air pollution include the following:

- Pave dirt roads within the development
- Pave outside storage areas
- Provide additional low VOC-producing trees on landscape plans
- Use alternative fuel fleet vehicles or hybrid vehicles
- Use emission control devices on diesel equipment

3.3 Global Climate Change

This section describes the existing global climate change setting and the applicable regulations, plans and standards.

3.3.1 Environmental Setting

Climate Change

Greenhouse gases (GHGs) trap energy from the sun and help maintain the temperature of the earth's surface, creating a process known as the greenhouse effect. The sun emits solar radiation and provides energy to earth. Six percent of the solar radiation emitted by the sun is reflected back by the atmosphere surrounding the earth, 20 percent is scattered and reflected by clouds, 19 percent is absorbed by the atmosphere and clouds, four percent is reflected back to the atmosphere by the earth's surface, and 51 percent is absorbed by the earth. GHGs such as CO_2 and CH_4 are naturally present in the atmosphere. The presence of these gases prevents outgoing infrared radiation from escaping the earth's surface and lower atmosphere, allowing incoming solar radiation to be absorbed by living organisms on earth. Without these GHGs, the earth would be too cold to be habitable; however, an excess of GHGs in the atmosphere can cause global climate change by raising the earth's temperature, resulting in environmental consequences related to snowpack losses, flood hazards, sea-level rises, and fire hazards.

Global climate change results from a combination of three factors: (1) natural factors such as changes in the sun's intensity or slow changes in the earth's orbit around the sun; (2) natural processes within the earth's climate system, such as changes in ocean circulation; and (3) anthropogenic activities, such as fossil fuel combustion, deforestation, reforestation, urbanization, and desertification, that change the composition of atmospheric gases. In its 2007 climate change synthesis report to policy makers, the Intergovernmental Panel on Climate Change (IPCC) concluded, "Global GHG emissions due to human activities have grown since pre-industrial times, with an increase of 70 percent between 1970 and 2004." Therefore, significant attention is being given to the anthropogenic causes of the increased GHG emissions level. In the review of regulatory publications from the California Air Pollution Control Officers Association (CAPCOA), the California Air Resources Board (CARB), the California Attorney General, and the Governor's Office of Planning and Research (OPR), there is a consensus on the close association between fossil fuel combustion, in conjunction with other human activities, and GHG emissions. In California, GHG emissions are largely contributed by the transportation sector, which was responsible for 35 and 38 percent of 1990 and 2004 GHG emissions statewide, respectively. After transportation followed the electricity generation sector, which was responsible for 25 percent of statewide emissions in both 1990 and 2004; the industrial sector, which was responsible for 24 and 20 percent of statewide 1990 and 2004 GHG emissions; and the commercial sector, which was responsible for 3 percent of statewide emissions in both 1990 and 2004.

Greenhouse Gases

Generation of electricity can produce GHGs with the criteria air pollutants that have been traditionally regulated under the federal and state Clean Air Acts. GHGs include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulfur hexafluoride (SF_6), which prevent heat from escaping to space. The principal climate-change gases resulting from human activity that enter and accumulate in the atmosphere are listed below.

1. Carbon Dioxide (CO_2): CO_2 enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees and wood products, and chemical reactions (e.g., the manufacture of cement). CO_2 is also removed from the atmosphere (or "sequestered") when it is absorbed by plants as part of the biological carbon cycle.

2. Methane (CH_4): CH_4 is emitted during the production and transport of coal, natural gas, and oil. CH_4 emissions also result from livestock and agricultural practices and the decay of organic waste in municipal solid waste landfills.

3. Nitrous Oxide (N_2O): N_2O is emitted during agricultural and industrial activities as well as during combustion of fossil fuels and solid waste.

4. Fluorinated Gases: HFCs, PFCs, and SF_6 are synthetic, powerful climate-change gases that are emitted from a variety of industrial processes. Fluorinated gases are often used as substitutes for ozone-depleting substances (i.e., chlorofluorocarbons, hydrochloro-fluorocarbons, and halons). These gases are typically emitted in smaller quantities, but because they are potent climate-change gases, they are sometimes referred to as high Global Warming Potential (GWP) gases.

GWP is a relative measure, compared to carbon dioxide, of a compound's residence time in the atmosphere and ability to warm the planet. Mass emissions of GHGs are converted into carbon dioxide equivalent (CO_2e) emissions for ease of comparison. CO_2e is a quantity that describes, for a given mixture and amount of GHG, the amount of CO_2 that would have the same GWP, when measured over a specified timescale.

GHG emissions in the United States come mostly from energy use. Energy-related carbon dioxide emissions, resulting from fossil fuel exploration and use account for approximately three-quarters of the human-generated GHG emissions in the United States, primarily in the form of CO_2 emissions from burning fossil fuels. More than half the energy-related emissions come from large stationary sources such as power plants; approximately a third comes from transportation; while industrial processes, agriculture, forestry, other land uses, and waste management make up a majority of the remainder of sources (USEPA, 2010). For wind power energy generation facilities, the stationary source GHG emissions are much smaller than fossil fuel-fired power plants, but the associated maintenance vehicle emissions are higher.

3.3.2 Applicable Regulations, Plans, and Standards

Federal

U.S. Environmental Protection Agency (USEPA)

On April 2, 2007, in *Massachusetts v. EPA*, 549 U.S. 497, the Supreme Court found that GHGs are air pollutants covered by the federal Clean Air Act (FCAA). The Court held that the USEPA must determine whether or not emissions of GHGs from new motor vehicles cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision. In making these decisions, the EPA is required to follow the language of section 202(a) of the FCAA. The Supreme Court decision resulted from a petition for rulemaking under section 202(a) filed by more than a dozen environmental, renewable energy, and other organizations.

After a thorough examination of the scientific evidence on the causes and effects of current and future climate change, as well as other effects of GHGs, the USEPA concluded that the science compellingly supports a positive endangerment finding for both public health and welfare. The USEPA relied heavily upon the major findings and conclusions from recent assessments of the U.S. Climate Change Science Program and the IPCC. The USEPA made this endangerment finding after considering both observed and projected future effects of climate change, key uncertainties, and the full range of risks and effects to public health and welfare occurring within the United States. In response to this endangerment finding, the USEPA issued a final rule on May 13, 2010 to apply Prevention of Significant Deterioration (PSD) requirements to new facilities whose carbon dioxide– equivalent emissions exceed 100,000 tons per year.

40 CFR Part 98. Mandatory Reporting of Greenhouse Gases Rule

On September 22, 2009, the USEPA issued the Final Mandatory Reporting of Greenhouse Gases Rule. Under this rule, the USEPA requires reporting of GHG emissions every year by suppliers of fossil fuels or industrial GHGs, manufacturers of vehicles and engines, and facilities that emit more than 25,000 metric tons of CO_2e emissions per year. The gases covered by the proposed rule are CO_2, CH_4, N_2O, HFCs, perfluorinated compounds (PFCs), SF_6, and other fluorinated gases, including nitrogen trifluoride and hydrofluorinated ethers.

BLM Guidance on Greenhouse Gases

On February 22,2010, Secretary of the Interior Ken Salazar issued Order No. 3289A1, addressing the impacts of climate change on domestic water, land, and other natural and cultural resources. The Order establishes an approach for increasing understanding of climate change and responding to potential climate change related impacts as relevant to the resources that the Department of the Interior (DOI) manages. The document specifically identifies potential impact areas including potential changes in flood risk and water supply, sea level rise, changes in wildlife and habitat populations and their migration patterns, new invasions of exotic species, and increased threat of wildland fire. The Order includes Climate Change Response Planning Requirements, which require each bureau and office within the DOI (including BLM) to consider

and analyze potential climate change impacts when undertaking long-range planning exercises, setting priorities for scientific research and investigations, developing multiyear management plans, and making major decisions regarding potential use of resources under DOI's purview.

40 CFR Part 52. Proposed Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule

The USEPA recently mandated application of the PSD requirements to facilities whose stationary-source CO_2e emissions exceed 75,000 metric tons per year. Beginning on January 2, 2011, this rule would only apply to sources that are currently subject to the PSD permitting program (that is, those that are newly-constructed or modified in a way that significantly increases emissions of a pollutant other than GHGs). Beginning on July 1, 2011, the rule will apply to new construction projects that emit least 100,000 metric tons of GHG per year, and to existing facilities that increase GHG emissions by at least 75,000 metric tons per year, even if they do not exceed the permitting thresholds for any other pollutant. The Proposed Action would not be expected to trigger PSD permitting as required by this regulation; nevertheless, GHG emissions of the Proposed Action are quantified.

Draft National Environmental Policy Act Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions

On February 18, 2010, the White House Council on Environmental Quality (CEQ) released, for public review and comment, a draft Guidance Memorandum for Heads of Federal Departments and Agencies on the consideration of GHG emissions and climate change impacts as part of compliance with the NEPA. All federal agency actions requiring NEPA review, except federal land and resource management activities, are covered by this Guidance. The draft Guidance provides guidance from CEQ to the federal agencies on the treatment of GHG emissions within NEPA: (1) the treatment of GHG emissions that may directly or indirectly result from a proposed federal action and (2) the analysis of potential climate change impacts upon a proposed federal action. In addition, the draft Guidance proposes several key elements for the examination of GHG emissions and climate change impacts:

1. The initial scoping phase within the NEPA process should consider the extent of potential GHG emissions from the proposed action over the life of the project and the likely climate change impacts within the foreseeable future. For GHG emissions, this would include projecting direct GHG emissions from the proposed federal action on an annual basis.

2. A "reference point" of 25,000 metric tons of direct CO2-equivalent GHG emissions is proposed as an "indicator" to determine if a proposed federal action's anticipated GHG emissions warrant detailed consideration in a NEPA review. However, for indirect GHG emissions, there is no proposed reference point.

3. Detailed consideration of direct GHG emissions would entail (1) the quantification of cumulative GHG emissions over the life of the project; (2) discussion of measures to

reduce GHG emissions, including consideration of reasonable alternatives; and (3) qualitative discussion of the link between such GHG emissions and climate change.

4. For the review of climate change impacts, the potential for climate change is reflected in the foreseeable future baseline (i.e., projections of the future climate conditions under a "no action" situation), as well as in the analysis of the effects of the proposed project on such future climate conditions.

5. The sensitivity, location, and timeframe of a proposed action should be considered in determining when climate change impacts would be subject to detailed consideration in the NEPA review. Climate change effects should be considered in the analysis of projects that are designed for long-term utility and located in areas considered vulnerable to specific effects of climate change within the project's anticipated lifetime.

6. In addition to including projections of future climate conditions within the baseline and alternatives analyses of proposed projects, CEQ underscores the need for agencies to consider adaptation measures and monitoring as elements of the federal agency action.

The draft Guidance includes cautions and limitations. Any analysis of GHG emissions and climate change impacts should be useful, relevant to the action under review, and limited to the consequences of actions over which the federal agency has control or authority. In addition, CEQ recognizes the limitations of climate change modeling and any application of global climate change models to regional, state, or localized analyses. CEQ recommends disclosure of the limitations and variability of any climate models used in the NEPA analysis and notes that global climate change models require downscaling and bias removal before use in any regional or local impact studies.

State

The legal framework for GHG emission reduction has come about through Executive Orders, legislation, and regulation. The major components of California's climate change initiative are reviewed below.

Senate Bill 97

Senate Bill (SB) 97, signed in August 2007, acknowledges that climate change is a prominent environmental issue requiring analysis under CEQA. This bill directed the Office of Planning and Research (OPR) to prepare, develop, and transmit to the California Natural Resources Agency guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions, as required by CEQA, no later than July 1, 2009. The California Natural Resources Agency was required to certify or adopt those guidelines by January 1, 2010.

On December 30, 2009, the Natural Resources Agency adopted the State CEQA Guidelines amendments, as required by SB 97. These State CEQA Guidelines amendments provide guidance

to public agencies regarding the analysis and mitigation of the effects of GHG emissions in draft CEQA documents. The amendments became effective March 18, 2010.

CEQA Guidelines

CEQA Guidelines Section 15064.4 specifically addresses the significance of GHG emissions. Section 15064.4 calls for a lead agency to make a "good-faith effort" to "describe, calculate or estimate" GHG emissions in CEQA environmental documents. Section 15064.4 further states that the analysis of GHG impacts should include consideration of (1) the extent to which the project may increase or reduce GHG emissions, (2) whether the project emissions would exceed a locally applicable threshold of significance, and (3) the extent to which the project would comply with "regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions." The revisions also state that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project will comply with the requirements in a previously approved plan or mitigation program (including plans or regulations for the reduction of greenhouse gas emissions) that provides specific requirements that will avoid or substantially lessen the cumulative problem within the geographic area in which the project is located (CEQA Guidelines Section 15064(h)(3).) The CEQA Guidelines revisions do not, however, set a numerical threshold of significance for GHG emissions.

The revisions also include the following guidance on measures to mitigate GHG emissions, when such emissions are found to be significant:

> Consistent with Section 15126.4(a), lead agencies shall consider feasible means, supported by substantial evidence and subject to monitoring or reporting, of mitigating the significant effects of greenhouse gas emissions. Measures to mitigate the significant effects of greenhouse gas emissions may include, among others:
>
> (1) Measures in an existing plan or mitigation program for the reduction of emissions that are required as part of the lead agency's decision;
>
> (2) Reductions in emissions resulting from a project through implementation of project features, project design, or other measures;
>
> (3) Off-site measures, including offsets that are not otherwise required, to mitigate a project's emissions;
>
> (4) Measures that sequester greenhouse gases; and
>
> (5) In the case of the adoption of a plan, such as a general plan, long range development plan, or plans for the reduction of greenhouse gas emissions, mitigation may include the identification of specific measures that may be implemented on a project-by-project basis. Mitigation may also include the incorporation of specific measures or policies found in an adopted ordinance or regulation that reduces the cumulative effect of emissions.

(CEQA Guidelines Section 15126.4(a).)

Assembly Bill 1493

In 2002, then-Governor Gray Davis signed Assembly Bill (AB) 1493, which required the CARB to develop and adopt, by January 1, 2005, regulations that achieve "the maximum feasible reduction of GHGs emitted by passenger vehicles and light-duty trucks and other vehicles determined by CARB to be vehicles whose primary use is noncommercial personal transportation in the state."

To meet the requirements of AB 1493, the CARB approved amendments to the California Code of Regulations (CCR) in 2004, adding GHG emissions standards to California's existing standards for motor vehicle emissions. Amendments to CCR Title 13, Sections 1900 and 1961 (13 CCR 1900, 1961), and adoption of Section 1961.1 (13 CCR 1961.1), require automobile manufacturers to meet fleet-average GHG emissions limits for all passenger cars, light-duty trucks within various weight criteria, and medium-duty passenger vehicle weight classes (i.e., any medium-duty vehicle with a gross vehicle weight [GVW] rating of less than 10,000 pounds and that is designed primarily for the transportation of persons), beginning with model year 2009. For passenger cars and light-duty trucks with a loaded vehicle weight (LVW) of 3,750 pounds or less, the GHG emission limits for model year 2016 are approximately 37 percent lower than the limits for the first year of the regulations, model year 2009. For light-duty trucks with an LVW of 3,751 pounds to a GVW of 8,500 pounds, as well as for medium-duty passenger vehicles, GHG emissions will be reduced approximately 24 percent between 2009 and 2016.

Because the Pavley standards (named for the bill's author, state Senator Fran Pavley) would impose stricter standards than those under the FCAA, California applied to the USEPA for a waiver under the FCAA; this waiver was denied in 2008. In 2009, however, the USEPA granted the waiver.

Executive Order S-3-05

In 2005, in recognition of California's vulnerability to the effects of climate change, then-Governor Arnold Schwarzenegger established Executive Order S-3-05, which sets forth the following target dates by which statewide GHG emissions would be progressively reduced: by 2010, reduce GHG emissions to 2000 levels; by 2020, reduce GHG emissions to 1990 levels; and by 2050, reduce GHG emissions to 80 percent below 1990 levels.

Assembly Bill 32 and the California Climate Change Scoping Plan

Assembly Bill 32 Requirements

In 2006, the California legislature passed Assembly Bill 32 (California Health and Safety Code Division 25.5, Sections 38500, et seq., or AB 32), also known as the Global Warming Solutions Act. AB 32 requires the CARB to design and implement feasible and cost-effective emission limits, regulations, and other measures, such that statewide GHG emissions are reduced to 1990 levels by 2020 (representing a 25-percent reduction in emissions). AB 32 anticipates that the GHG reduction goals will be met, in part, through local government actions. The CARB has identified a GHG reduction target of 15 percent from current levels for local governments themselves and notes that successful implementation of the plan relies on local governments' land use planning and urban growth decisions because local governments have primary authority to

plan, zone, approve, and permit land development to accommodate population growth and the changing needs of their jurisdictions.

Scoping Plan Provisions

Pursuant to AB 32, the CARB adopted a *Climate Change Scoping Plan* in December 2008 (re-approved by the CARB on August 24, 2011 [CARB, 2008]) outlining measures to meet the 2020 GHG reduction goals. In order to meet these goals, California must reduce its GHG emissions by 30 percent below projected 2020 business-as-usual emissions levels or about 15 percent from today's levels. The Scoping Plan recommends measures that are worth studying further, and that the State of California may implement, such as new fuel regulations. It estimates that a reduction of 174 million metric tons of CO_2e (about 191 million U.S. tons) from the transportation, energy, agriculture, forestry, and other sources could be achieved should the state implement all of the measures in the Scoping Plan. The Scoping Plan relies on the requirements of Senate Bill (SB) 375 (discussed below) to implement the carbon emission reductions anticipated from land use decisions.

Cap-and-Trade Program

The Scoping Plan identifies cap-and-trade as a key strategy for helping California reduce its GHG emissions (CARB, 2008). A cap-and-trade program sets the total amount of greenhouse gas emissions allowable for facilities under the cap and allows covered sources, including producers and consumers of energy, to determine the least expensive strategies to comply. AB 32 required the CARB to adopt the cap-and-trade regulation by January 1, 2011, and the program itself began in November 2012.

Carbon offset credits are created through the development of projects, such as renewable energy generation or carbon sequestration projects, that achieve the reduction of emissions from activities not otherwise regulated, covered under an emissions cap, or resulting from government incentives. Offsets are verified reductions of emissions whose ownership can be transferred to others. As required by AB 32, any reduction of GHG emissions used for compliance purposes must be real, permanent, quantifiable, verifiable, enforceable, and additional. Offsets used to meet regulatory requirements must be quantified according to CARB-adopted methodologies, and the CARB must adopt a regulation to verify and enforce the reductions. The criteria developed will ensure that the reductions are quantified accurately and are not double-counted within the system (CARB, 2008).

Executive Order S-1-07

Executive Order S-1-07, signed by then-Governor Arnold Schwarzenegger in 2007, proclaimed that the transportation sector is the main source of GHG emissions in California, at over 40 percent of statewide emissions. The order established a goal of reducing the carbon intensity of transportation fuels sold in California by a minimum of 10 percent by 2020. It also directed the CARB to determine whether this Low Carbon Fuel Standard could be adopted as a discrete, early-action measure after meeting the mandates in AB 32. The CARB adopted the Low Carbon Fuel Standard on April 23, 2009.

Senate Bills 1078 and 107 and Executive Orders S-14-08 and S-21-09

SB 1078 (Chapter 516, Statutes of 2002) requires retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide at least 20 percent of their supply from renewable sources by 2017. SB 107 (Chapter 464, Statutes of 2006) changed the target date to 2010.

In November 2008, then-Governor Schwarzenegger signed Executive Order S-14-08, which expands the state's Renewable Portfolio Standard to 33 percent renewable power by 2020. In September 2009, then-Governor Schwarzenegger continued California's commitment to the Renewable Portfolio Standard by signing Executive Order S-21-09, which directs the CARB under its AB 32 authority to enact regulations to help the state meet its Renewable Portfolio Standard goal of 33 percent renewable energy by 2020.

The 33-percent-by-2020 goal was codified in April 2011 with Senate Bill X1-2, which was signed by Governor Edmund G. Brown, Jr. This new Renewable Portfolio Standard preempts the CARB 33 percent Renewable Electricity Standard and applies to all electricity retailers in the state, including publicly owned utilities (POUs), investor-owned utilities, electricity service providers, and community choice aggregators. All of these entities must adopt the new Renewable Portfolio Standard goals of 20 percent of retail sales from renewables by the end of 2013 and 25 percent by the end of 2016, with the 33 percent requirement being met by the end of 2020.

Senate Bill 1368

SB 1368 is the companion bill of AB 32 and was signed by then-Governor Schwarzenegger in September 2006. SB 1368 requires the California Public Utilities Commission (CPUC) to establish a GHG emission performance standard for baseload generation from investor-owned utilities by February 1, 2007. The California Energy Commission (CEC) was also required to establish a similar standard for local publicly owned utilities by June 30, 2007. These standards cannot exceed the GHG emission rate from a baseload combined-cycle natural gas-fired plant. The legislation further requires that all electricity provided to California, including imported electricity, must be generated from plants that meet the standards set by the CPUC and CEC.

Senate Bill 375

In addition to policy directly guided by AB 32, the legislature in 2008 passed SB 375, which provides for regional coordination in land use and transportation planning and funding to help meet the AB 32 GHG reduction goals. SB 375 aligns regional transportation planning efforts, regional GHG emissions reduction targets, and land use and housing allocations. SB 375 requires Regional Transportation Plans (RTPs) developed by the state's 18 metropolitan planning organizations (MPOs) to incorporate a "sustainable communities strategy" (SCS) that will achieve GHG emission reduction targets set by the CARB. SB 375 also includes provisions for streamlined CEQA review for some infill projects, such as transit-oriented development. SB 375 would be implemented over the next several years. California Climate Action Registry

Established in 2001, the California Climate Action Registry (CCAR) is a private nonprofit organization originally formed by the State of California. CCAR serves as a voluntary GHG registry and led efforts to develop credible, accurate, and consistent GHG reporting standards and tools for businesses, government agencies, and nonprofit organizations to measure, monitor, and reduce GHG emissions. For instance, the CCAR General Reporting Protocol, Version 3.1, dated January 2009, provides the principles, approach, methodology, and procedures required for voluntary GHG emissions reporting by businesses, government agencies, and nonprofit organizations.

Local

Certain Air Pollution Control Districts (APCDs) have proposed their own levels of significance. The Eastern Kern Air Pollution Control District (EKAPCD) within which the project is located, has local regulatory authority over the air pollutant emissions, but has not established a significance threshold.

Kern County Existing Conditions

To establish a reference point for future GHG emissions, Sapphos have projected CO_2e emissions based on an unregulated, business-as-usual, GHG emissions scenario that does not consider the reductions in GHG emissions required by State regulations described above. According to CARB's 2008 Scoping Plan, California contributed 427 million metric tons of GHG emissions in CO_2e in 1990, and under a business-as-usual development scenario, will contribute approximately 596 million metric tons of CO_2e emissions in 2020, which presents a linear upward trend in California's total GHG emissions. In August 2011, the Scoping Plan was re-approved by the Board and includes the Final Supplement to the Scoping Plan Functional Equivalent Document. This document updated the projected 2020 business-as-usual emissions for the State to 507 million metric tons of CO_2e emissions based on current economic forecasts (i.e., as influenced by the economic downturn) and reduction measures that were already in place.

To characterize the business-as-usual GHG emissions specifically for Kern County, information on population has been collected from the Kern Council of Governments. It has been projected that the population of Kern County will increase by approximately 1.9 percent from 2006 to 2030. Using the current CO_2e emissions factor of 14 metric tons per capita, Kern County would be responsible for the emission of approximately 12 million metric tons of CO_2e in 2010 and 17 million metric tons of CO_2e in 2030 under a business-as-usual emissions scenario (see Table 3.3-1 below).

TABLE 3.3-1
CHARACTERIZATION OF BUSINESS-AS-USUAL GHG EMISSIONS FOR KERN COUNTY

	1990	2000	2006	2010	2020	2030
Population	543,477	661,653	779,869	845,600	1,010,800	1,208,200
CARB emission factor (Metric tons of CO_2e per capita)	14	14	14	14	14	14
Annual GHG emissions for Kern County (million metric tons of CO_2e)	7.6	9.3	10.9	11.8	14.2	16.9

SOURCE: Sapphos Environmental, Inc., 2014. *Tylerhorse Wind Energy Project Air Quality Impact Technical Report*, March 2014.

3.4 Cultural Resources

Cultural resources, for the purposes of complying with the National Environmental Policy Act (NEPA) and the National Historic Preservation Act (NHPA) Section 106, are locations of human activity, occupation, or use identifiable through field inventory, historical documentation, or oral evidence. Cultural resources can include archaeological, historic, or architectural sites, structures, or places with important public and scientific uses, and may include definite locations (sites or places) of traditional cultural or religious importance to specified social and/or cultural groups, e.g., "traditional cultural properties." Three kinds of cultural resources are considered in this assessment: prehistoric, ethnographic, and historic-period archaeological and built environment resources. As explained below, cultural resources may be, but are not necessarily, eligible for the National Register of Historic Places (NRHP). Under the NEPA, impacts on all cultural resources are considered, regardless of their eligibility for inclusion in the NRHP.

Prehistoric archaeological resources are associated with the human occupation and use prior to sustained 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 permanently 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.

Cultural resources are categorized as buildings, sites, structures, objects, and districts for the purposes of complying with federal law (NEPA and Section 106 of the NHPA). Under federal and state historic preservation law, cultural resources generally must be at least 50 years old to have sufficient historical importance to merit consideration of eligibility for listing in the 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 eligible for listing.

This section is based on the cultural resources records search and inventory conducted by Sapphos and discussed in their Cultural Resources Technical Report for the Tylerhorse Wind Energy Project (Sapphos, 2013). The cultural resources study was conducted pursuant to Section 106 of the NHPA (36 CFR 800) and in compliance with Section 5024.1 of the California Public Resources Code (PRC) to determine the presence of historic properties within the Area of Potential Effects (APE) for the TWP. The confidential report is available at the Southern San

Joaquin Valley Information Center (SSJVIC), housed at California State University, Bakersfield and the BLM Ridgecrest Field Office. Chapter 5, Consultation, Coordination, and Public Involvement, describes the NHPA Section 106 Compliance for the proposed Project, including the BLM government-to-government and NHPA Section 106 consultation with Native American tribes to identify resources of cultural or religious significance.

3.4.1 Environmental Setting

The APE consists of approximately 1,207 acres (1.9 square miles) located within three separate parcels of BLM managed public lands. The APE and project area are located about 37 miles north of the City of Santa Clarita (in the County of Los Angeles) and roughly 43 miles southeast of the City of Bakersfield (in Kern County) in the south-central portion of the unincorporated area of Kern County, California. The APE is located in Township 10 North, Range 15 West, and includes Section 24, the North ½ of Section 26, and the South ½ of the Southeast ¼ of Section 26 as shown on the Tylerhorse Canyon U.S. Geological Survey (USGS) 7.5-minute quadrangle. map.

Area of Potential Effects

The APE for the proposed Project is defined as "the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist" (36 CFR 800.16[b]).

The archaeological APE for the TWP includes both the 354 acres of direct physical impact of the proposed facility, including all ground disturbances, plus a 100-foot buffer around the area of direct impacts, and the remaining 853 acres of the project area that occur within the ROW grant application.

The ethnographic and architectural APE includes the full 1,207 acre project area and a half mile visual buffer zone. The visual buffer accommodates the surrounding area, which may be affected by the incorporation of new visual elements. This is similar to the project viewshed, which is defined as all land areas from which any element of the Proposed Action would be visible.

Physical Setting

The proposed Project is located at the southern base of the Tehachapi Mountains and is characterized by a gradually sloping plateau from northwest to southeast that is incised by a dense network of dry desert washes. The topography of the project area slopes from 3,960 feet elevation in the northeast to 3,480 feet elevation in the southwest corner in the Antelope Valley. Native and nonnative species typical of the upper Mojave Desert and lower reaches of the Tehachapi Mountains are located in the vicinity, including California Juniper Woodland, Joshua Tree Woodland, California buckwheat scrub, Mormon tea scrub, and wild grasses. The soil is a tan color, consisting of sandy/slit texture, with round and angular cobbles, situated among rocks and boulders of various sizes and types. Disturbance to the habitats from livestock grazing, off-road vehicle (ORV) use, and mining, ranges from moderate to substantial. There is no

developed roadway system within the project area; however, there is an existing, rather dense network of two-track dirt roads and single ORV tracks that have been used historically to support ORV use and ranch operations. No paved roads exist within the project area and the area is primarily undeveloped.

Geoarchaeological Discussion

The project area can be divided into three groups separated by unconformities describes as late Paleozoic metamorphic rocks (Bean formation), Mesozoic crystalline rocks (quarts monzonite and quartz diorite), and Quaternary age sedimentary deposits (Sapphos, 2011). In many places, the interface between older land surfaces and alluvial deposits are marked by a well-developed buried soil profile, or a paleosol. Paleosols preserve the composition and character of the earth's surface prior to subsequent sediment deposition; thus, paleosols have the potential to preserve archeological resources if the area was occupied or settled by humans (Meyer and Rosenthal, 2007). Because human populations have grown since the arrival of the area's first inhabitants, younger paleosols (late Holocene) are more likely to yield archeological resources than older paleosols (early Holocene or Pleistocene). The project vicinity, therefore, has a very low potential to contain archaeological resources that have been buried by natural processes.

Prehistoric Background

Archaeological sequences for the Great Basin and Mojave Desert are grouped into Late Pleistocene and Early, Middle, and Late Holocene time frames, with period and phase definitions varying by region. Two separate sets of period names are in common use. One of the period names has been broadly applied to the Mojave Desert, while the other is derived from studies in the Owens Valley and is not discussed here. However, the prehistoric chronology for the region is being refined on a continuing basis, with new discoveries and improvements in the accuracy of dating techniques. As stated above, this section is primarily based on the *Cultural Resources Technical Report for the Tylerhorse Wind Energy Project* (Sapphos, 2011).

Pre-Paleo-Indian Period, Circa 12,000 BP

Throughout North America, the earliest Pleistocene archaeological sites, which may be earlier than 12,000 years BP, are often referred to as pre-Clovis and are viewed as controversial by many archaeologists because of the lack of dateable contexts and the accuracy of some of the dated materials. One of the most thorough studies on this time period is Emma Lou Davis's 1978 study of Pleistocene Lake China, Ridgecrest, in eastern California.

Paleo-Indian Period, Circa 12,000 BP to 10,000 BP

The subsequent Paleo-Indian period (also known as Clovis Period) is recognized throughout the west by the presence of Clovis-style fluted projectile points and associated artifacts. Recent calibrations of these radiocarbon dates suggest that fluted points may be up to 2,000 years older than previously thought, with a range of about 13,000 to 11,000 calendar years BP. Although many fluted points have been found in the Great Basin and Mojave Desert, none of these have been recovered in dateable contexts. Emma Lou Davis 1978 study of Pleistocene Lake China,

Ridgecrest, in eastern California, identified several sites associated with the shoreline at Pleistocene Lake China that contained Clovis points. These have recently been relocated and investigated by Dr. Mark Basgall (Sapphos, 2013; Basgall and Overly, 2004). In the vicinity of the project area, Clovis-like points have been reported in the Antelope Valley and the adjacent mountains. Clovis points have been interpreted as tools used for hunting the Pleistocene megafauna with which they are associated at sites in the southwestern United States.

Lake Mojave Period, Circa 10,000 BP to 7,000 BP

The quantity of archaeological remains in the western United States increases at the beginning of the Holocene period, about 11,000 years BP. Sites from the Early Holocene are found along the shorelines of Pleistocene dry lakes and are characterized by the occurrence of large stemmed and concave base projectile points, as well as other distinctive flaked stone tools. The point types that are associated with this period are known as Lake Mojave and Silver Lake projectile points, named for the dry lakes where they were first found. Lake Mojave sites are rare in the Mojave Desert, although at least five sites containing Lake Mojave period points have been reported on Edwards Air Force Base, approximately 15 miles from the project area.

Pinto Period, Circa 7,000 BP to 4,000 BP

With the onset of the Middle Holocene, the climate became dryer and hotter throughout the deserts of the western United States. Under these conditions, the subsistence focus most likely shifted away from lakeshores and toward upland resources. The Middle Holocene is characterized by the appearance of Pinto series projectile points, as well as points that are similar to the Gatecliff series that has been defined for the central Great Basin. Pinto series projectile points are smaller than Lake Mojave points, and their name derives from the Pinto Basin, where they were first defined. The period is not well defined because of a paucity of chronometric data and disagreement on the definition and dating of the Pinto series.

Gypsum Period, Circa 4,000/3,500 BP to 1,500 BP

About 4,000 years ago, climatic conditions shifted again, this time to the cooler, moister conditions characterizing the Late Holocene. An increase in population, trade, and social complexity occurred with the more favorable climate conditions. There was an increase in the use of seeds, which is indicated by the presence of milling stones; however, hunting of a variety of fauna, including mountain sheep, remained an important part of the economy. There is evidence of larger settlements early in the Late Holocene. This period is characterized by the replacement of Pinto points with Gypsum and Elko series projectile points. In the Owens Valley region, at approximately the same time period, Pinto points were replaced by Humboldt and Elko series projectile points. Several well-known sites contain components from this time period.

Rose Spring Period, Circa 1,500 to 1,000/600 BP

Throughout the Great Basin, about 1,500 years ago, Elko and other dart-size points were replaced with Rose Spring and Eastgate projectile points, often grouped together under the label "Rosegate." This occurrence, which correlates with the introduction of the bow and arrow around

500 AD, may also mark the beginning of the Numic expansion, which most researchers believe emanated from southeastern California. The appearance of Rose Spring series projectile points marks the beginning of the Rose Spring period in the Mojave Desert. Major villages and numerous other sites dating to this time period have been recorded in eastern California. Many of these contain bedrock milling features and portable milling stones.

Late Prehistoric Period, Circa 1,000 BP, to Historic Contact, Circa 1770 AD

The final time period is known as the Late Prehistoric in the Mojave Desert. The period began about 1,000 BP and lasted until historic contact. Desert side-notched and Cottonwood series projectile points replaced the larger points from the previous period, and pottery first appeared in the form of Owens Valley brown ware. During this period, trade networks increased along the Mojave River and over the San Gabriel Mountains. Earle et al. in the 1997 study, *Ethnohistoric Overview of the Edwards Air Force Base Region and the Western Mojave Desert,* suggest that groups from the Antelope Valley served as intermediaries among populations located in peripheral areas (Sapphos, 2013).

Ethnographic Background

The project area is located at the transition between the Tehachapi Mountains and the western Mojave Desert, an area that has been inhabited by various Native American groups such as the Kawaiisu, Chemehuevi, Tataviam, Kitanemuk, Vanyume, and Serrano. Two main groups, the Kawaiisu and the Kitanemuk, occupied the project vicinity. The Kawaiisu were hunters and gatherers who expanded from their homelands in the Mojave Desert to inhabit the Tehachapi Mountains and southern Sierra Nevada region. Their migration is linked to the Numic expansion, during which Numic speakers from Southern California moved north into the Great Basin.

The Kawaiisu were organized into small, non-sedentary bands that traveled seasonally, following the available resources. After migrating, the Kawaiisu modified their subsistence practices and adopted the consumption of acorn as a staple, with other desert plants playing a minor role in their diet. Berries and greens of different types were also part of their diet, as well as local seeds such as wild rice, chia, sunflower, and buckwheat, which are still available in the region. Salt was also important in their diet and was collected from the Koehn Lake, located 30 miles from the Tomo-Kahni area, or from Proctor Lake in the Tehachapi Valley when water levels at Koehn Lake were low. Basket making was also a tradition among the Kawaiisu, who developed a particular type of coiled basket that is not found anywhere else in the Great Basin or California.

Raw material for tool making such as chert was likely obtained from areas near Red Rock Canyon, while obsidian was possibly acquired through trade with groups living near the Coso Volcanic Field (east of the Sierra Nevada). The Kawaiisu were involved in long-distance trade exchanges, which was facilitated by their geographic position between the San Joaquin Valley and the Great Basin groups.

The Kawaiisu are also known for their polychromatic rock art. A famous Kawaiisu rock art site exhibiting many pictographic elements is Teddy Bear Cave (CA-KER-508), located along the

western edge of Sand Canyon approximately 12 miles northeast of Tehachapi and the project area. The Cave is characterized by several rock features in the form of rock rings, over 400 bedrock mortars, and rock art. Sutton, M.Q. 1997 reports that the Kawaiisu believed that their people and the world were created at the location of this site (Sapphos, 2013).

The Kitanemuk inhabited the Tehachapi Mountains at the northwestern edge of the Antelope Valley. The Kitanemuk may have been the main inhabitants of the western Antelope Valley, but they are one of the least known groups in California. The Kitanemuk culture seems to have shared more similarities with southern coastal groups such as the Chumash, than with the Great Basin groups. They spoke a Serrano language dialect of the Takic branch that was spoken by groups living as far as Yucca Valley and Twenty-nine Palms.

Historical Background

After the Spanish began colonizing coastal California in 1769, Native American groups were subject to social and cultural changes, including the establishment of the Spanish mission system throughout the state and the introduction of new diseases, which spread rapidly and decimated the native population. In 1776, Francisco Garces explored the area near the Tehachapi Mountains when crossing the Oak Creek Pass, while traveling from San Joaquin Valley to Mojave. Historic accounts also indicate that Garces may have left traces of his visit at Willow Springs (near Rosamond) and on Castle Butte (near California City).

Native American groups were greatly reduced in size and were incorporated in the Spanish-American economy by the 1830's. They were grouped into three major social categories: residents of Hispanic ranchos, day laborers who lived around missions and towns, and those who remained in the interior Rancherias, maintaining a more traditional way of life. The decimation of the Native American population increased rapidly during the smallpox epidemics of 1863 and 1870.

Between 1821 and 1846, the western Mojave Desert remained outside the Hispanic settlement and stock-raising frontier. The closest Hispanic settlement was the Rancho San Francisquito in the Santa Clarita-Newhall area, approximately 20 miles south of Antelope Valley. In 1853, a U.S. Army survey party traveled through the region looking for possible railway routes that would connect the San Joaquin and Antelope Valleys. Earle et al. 1997, mentions the lack of evidence of permanent settlements but does notes evidence of camping by native stock raiders near modern Rosamond. During the early 1850s, the resident Native American populations were caught in an environment of violence between the Numic desert raiders and the Hispanic and American livestock operators, miners, and adventurers (Sapphos, 2013). This forced these populations to either relocate into reservations at Fort Tejon or Tule River, or disperse into more isolated environments.

From 1853 to 1863, the San Joaquin Valley, the Tehachapi Mountains, and western Antelope Valley (all of which were originally considered remote areas) became centers of gold and silver mining. Mining towns such as Keysville, Calico, and Oro Grande were established during this period. Rosamond, Barstow, and Mojave became transportation hubs for supplies for mining

operations. The development of a system of communication for the transportation of goods and passengers (stagecoach route) contributed to the interaction of the desert towns and the main points of commerce. The first stagecoaches began operation in California in 1849 with two lines; one ran between San Francisco and San Jose, and the other ran from Sacramento to towns on the American River. In Kern County, the first stage line began operation soon after Fort Tejon was established in 1854. The stagecoach route closest to the project area went from El Monte and Los Angeles all the way to either Tehachapi or the San Joaquin Valley. The route crossed San Fernando Pass (also known as Beales' Cut) through San Francisquito Canyon, where there was a way station for the travelers. The journey continued to Elizabeth Lake where another station was located. At this point, the stagecoach route split to the north and to the east. Travelers heading to Tehachapi took the north route, which continued north to Willow Springs (about 8 miles east of the project t area). Willow Springs was an important way station for the travelers and had been used by Native Americans before the stagecoach routes, the pioneers, and the teamsters took advantage of it. (Today, what remains of the Willow Springs station is part of an adobe wall and the spring itself). The route continued to the Oak Creek Station and crossed the Oak Creek Pass to Tehachapi. Travelers going to the San Joaquin Valley continued to the west from Elizabeth Lake over the Tejon Pass, following the south edge of the Antelope Valley, all the way to the San Joaquin Valley.

The construction of the Southern Pacific Railroad across the Antelope Valley began in the early 1870s and the line was completed in 1876. After 1875, the use of the railroad system and the closing of the mines forced the stage lines in Kern County to come to an end, but several small lines continued to transport passengers up to 1912. An influx of people moved into the area when public domain lands were offered for homesteading. Between the 1880s and 1920s, climatic conditions changed dramatically between wet and drought years. Only those agricultural colonies with enough water supplies for human consumption and irrigation survived, while the others failed. The importance of gold mining operations ended in 1942 when the War Production Board issued Limitation Order L-208, which classified gold mines as nonessential for the war effort.

The military arrived in the western Mojave Desert in 1928, when the dry lakebed near Muroc became an area for U. S. Army aviation operations. In 1942, the facility was named Army Air Base, Muroc Lake, which later became Muroc Air Force Base in 1948. In 1949, the base was renamed Edwards Air Force Base after Captain Glen W. Edwards.

The historic occupation of the project vicinity is directly linked to the history of the nearest town, Rosamond. The Southern Pacific Railroad laid tracks through the town in 1876 and owned the town until 1887. The company finally sold lots, and people began to populate the town. Among these homesteaders was Charles A. Graves, an African American who moved to the town in 1882 and became "one of the first successful cattlemen and miners of the desert area." Graves became the first postmaster at Rosamond from 1898 to 1903 and donated land to install the first school in 1907. The economic development of Rosamond was associated with sheep and cattle raising in the late 1800s, and by 1920, agriculture also became productive in the area, with crops including alfalfa, cotton, potatoes, onion, carrots, and corn.

Cultural Resources Inventory Methods

Class I Inventory Methods

Prior to the start of the fieldwork, an archaeologist from Sapphos conducted an archival search at the Southern San Joaquin Valley Information Center (SSJVIC) in November 2004 and April 2005 for the adjacent Pacific Wind Energy Project and Manzana Wind Energy Project. Record search results specific to the Tylerhorse Wind Energy Project were subsequently updated on December 13, 2011. The purpose of the archival search was to identify cultural resources previously documented both in the project area and within 1 mile of the Area of Potential Effects in order to (1) determine which portions of the project area may have been previously surveyed, when those surveys took place, and how the surveys were conducted; and (2) ascertain the potential for cultural resources to be found in the APE. This search included a review of the Tylerhorse USGS topographic map on which cultural resources are plotted, site records, and data from previous surveys and research reports. In addition, the State of California Historic Resource Inventory Database, listings in the National Register of Historic Places, California Register of Historic Resources, California Historical Landmarks, and California Points of Historical Interest were examined to ascertain the presence of designated, evaluated, and/or historic-era resources within the project area. Finally, the Class I Inventory included research involving published and unpublished literature to collect prehistoric, historic, and ethnographic data pertaining to the history of human uses of land and resources within the ROW grant area.

Coordination with BLM archaeologist Mr. Donald J. Storm was undertaken to determine if the BLM had any additional information regarding cultural resources that may be located within the cultural resources study area. The BLM record search provided no additional data beyond those previously obtained from the SSJVIC.

Agency and Tribal Coordination

Coordination with the BLM and other resource agencies was undertaken to further evaluate the potential presence of cultural resources. The BLM Ridgecrest Field Office mailed letters to five Tribal communities in eastern Kern County in June , 2009, asking if there any concerns, questions, or areas important to them that might be affected by the project. During January 2011 letters were again sent to these tribal communities informing them that the original Type III wind energy facility application had been submitted to the BLM by enXco, and asked if there were any areas of importance to them within the project area. A third set of letters was sent to these same communities in May, 2013, informing them of the revised project application by Heartland Wind, and again the BLM asked if there were any areas of concerns. In May 2013, letters were also sent to five Tribes in the Owens Valley asking if they have concerns, questions, or knew of any areas of cultural importance to them that would be affected by the project.

The BLM received two responses. The Timbisha Shoshone Tribe determined that the project is considered outside the Tribe's ancestral lands and expressed no concerns. The Bishop Tribal Council of the Bishop Paiute Tribe recommended that a Tribal Cultural Monitor be hired for monitoring purposed during all ground disturbing activities and that artifacts should be protected from vandals as well as construction crew. The Tribe also expressed concern regarding Bald

Eagles, Golden Eagles, and other bird species. Consultation with the Native American Heritage Commission determined that there are no recorded Sacred Sites within the project area. These consultations have resulted in the understanding that there are no known sensitive Native American sites, locations, or features in the ROW grant area.

Class III Intensive Field Surveys

Sapphos conducted Class III intensive field surveys in accordance with the supplemental instructions provided by the BLM and the SHPO and within the guidelines of the BLM Manual 8110, section 210. Class III surveys are full-coverage surveys intended to completely assess the presence of cultural resources within the area surveyed. Class III surveys were conducted on a total of 1,207 acres, which included the project's 354 acre Direct Impact Zone (the project's footprint) and the remaining 853 acres within the APE. The APE was surveyed to Class III intensive standards to provide flexibility in project design by allowing project elements to be slightly realigned without triggering the need for additional cultural surveys.

Field surveys were conducted in three sessions. The first session was completed in July 2010 of 194 acres within the APE and one previously known archaeological site was noted. The second session which covered about 480 acres was conducted from November to December 2011 and one isolated artifact was found. Additional surveys were conducted in February 2013 on about 533 acres and six sites and four isolated artifacts were identified. The surveys were conducted by archaeologists from Sapphos under BLM Cultural Use Permit CA-10-37.

Field Methods

Class III Surveys. The three Class III intensive survey efforts consisted of the systematic survey of the proposed Project's 1,207 acre APE. In accordance with the requirements of a Class III intensive survey, these areas were surveyed on foot with field investigation teams composed of two to three persons, spaced at 15- to 20-meter intervals, depending on terrain type and ground visibility. Survey areas were located in the field with global positioning system (GPS) receivers. Roads were used to access survey areas by vehicle. If the road did not extend to the limits of the survey area, the crew walked the remaining distance. No vehicles were used outside paved, dirt, or gravel roads. If archaeological materials were encountered, the crew examined the area closely and temporarily marked any artifacts with pin flags to determine the extent of the cultural deposit (site or isolate). Field mapping of cultural resources was supported by an Ashtech Mobile Mapper 100 handheld GPS device with sub-meter accuracy. Sites and isolates were given field numbers using the prefix "TY-." All resources encountered were recorded on State of California, Department of Parks and Recreation, Archaeological Site Record, DPR 523 series forms, site sketch maps were prepared, photographs were taken of key components, and their locations were mapped on the appropriate UGSG quadrangles using GPS receivers, and map and compass, as necessary. Elevations were determined from USGS maps. Collection was limited to at-risk artifacts. Collection activities were coordinated with the BLM Ridgecrest Field Office. All DPR forms were submitted to the SSJVIC for assignment of primary numbers and permanent trinomial designations.

Cultural Resources Inventory Results

Prehistoric Resources

The results of the Class I literature review indicate that six prehistoric cultural resources have previously been recorded within the records search radius (Table 3.4-1). Five of the six prehistoric resources occur within the 1-mile radius around the project area. . The other previously recorded archaeological site (designated as CA-KER-1906) is located within the project area and is described below.

TABLE 3.4-1
PREVIOUSLY RECORDED PREHISTORIC ARCHAEOLOGICAL RESOURCES WITHIN ONE MILE OF THE PROJECT AREA

Primary #	Trinomial	Description	Distance from nearest Project Component
P-15-000273	CA-KER-273	Pictograph, bedrock mortars; occupation site	5,000 feet north
P-15-000752	CA-KER-752	Small midden	5,000 feet north
P-15-001193	CA-KER-1193	Small pictograph and bedrock mortar	5,000 feet northeast
P-15-001195	CA-KER-1195	Two bedrock mortars	4,800 feet northeast
P-15-001198	CA-KER-1198	Single mortar cup in a decomposed granite outcrop	5,000 feet northwest
P-15-001906	CA-KER-1906	Two mortars worked into a single granite boulder; milling station	Within APE ; approximately 500 feet east of DIZ

SOURCE: SSJVIC, 2011

CA-KER-1906

Site CA-KER-1906 was originally recorded in 1984 by BLM archaeologist J. Oxendine and was described as two shallow mortars on a single boulder, with a possible pestle adjacent to the boulder. Sapphos re-located site CA-KER-1906 during the 2010 Class III survey and re-recorded the site to DPR 523 series standards. The boulder and mortars were observed as described by Oxendine in 1984, but Sapphos archaeologists could not re-locate the pestle. Although this site is located in the APE it is not located within the project's Direct Impact Zone (DIZ).

The final results of the three Class III field surveys conducted by Sapphos resulted in the recording of five new prehistoric resources (see Table 3.4-2*)*. All five resources are located within the APE, although none are located within the project footprint itself (the DIZ).

TABLE 3.4-2
NEWLY RECORDED PREHISTORIC ARCHAEOLOGICAL RESOURCES

Primary	Description	Within APE	Within DIZ
TY-Site-1	Single rhyolite boulder with eight observed milling surfaces	×	
TY-Site-2	Two granitic boulders with four observed milling surfaces on each boulder	×	
TY-Site-3	Milling station composed of multiple boulders and milling surfaces; three projectile points; one granitic mano; an associated flake scatter with two loci	×	
TY-Site-4	Large granitic boulder with one observed milling surface	×	
TY-Isolate-1	Single chert projectile point	×	

TY-Site-1

TY-Site-1 is composed of a single rhyolite boulder measuring 2.19 meters by 2.15 meters featuring eight observed milling surfaces, all bedrock mortars. The bedrock mortars range from 5.5 centimeters (cm) to 17 cm in depth and are a mix of saucer, conical, and ovular in shape.

At the request of BLM archaeologist Mr. Donald Storm, Sapphos initiated subsurface testing at TY-Site-1 to ascertain the presence of buried cultural materials associated with the bedrock mortar. Sapphos archaeologists completed five shovel test pits (STPs) in the immediate vicinity of TY-Site-1. Each STP measured 30 cm in diameter and was excavated in 10-cm levels to a depth of 50 cm. All excavated soils from the STPs were screened by level through a 1/8-inch (3-millimeter) wire mesh screen. No cultural materials were encountered during the subsurface testing.

TY-Site-2

TY-Site-2 measures 5 meters (east-west) by 4 meters (north-south) and is composed of two granitic boulders with four observed milling surfaces on each boulder. The boulders, located two meters apart, are set in an alluvial slope and are tilted approximately 12 degrees to the southwest. The boulders are fully exposed.

TY-Site-3

TY-Site-3 is a prehistoric site composed of a bedrock milling station, associated lithic scatter, and several artifacts. It measures 156 meters (east-west) and 108 meters (north-south). The lithic scatter is organized into one large scatter and two loci of relatively higher flaked stone concentrations. Locus I is located northwest of the milling station. Locus II is located even further to the northwest. A relatively lower concentration of flakes can be found distributed throughout the site boundary. Identified artifacts include a rhyolite biface, an obsidian projectile point, a basalt project point, a rhyolite core, a rhyolite projectile point and a mano. The artifacts are primarily concentrated around Locus I.

Feature 1, Milling Station

The milling station comprises five granitic boulders (Features A–E) with multiple milling surfaces. A total of 21 milling surfaces were observed on the five bedrock features. All of the recorded milling surfaces are bedrock mortars; these range from barely visible, incipient saucer mortars to deep (>10 cm), well-formed conical mortars. No pestles or other portable milling equipment was observed onsite. Several flaked- and ground-stone tools were recorded within the TY-Site-3 boundary.

TABLE 3.4-3
TY-SITE-3 DEBITAGE BY LOCATION AND MATERIAL TYPE

Location	Rhyolite	Chert	Obsidian	Total	Percentage
Locus I	34	7	5	46	44%
Locus II	14	4	0	18	17%
Outside loci boundaries	30	7	3	40	39%
Total	78	18	8	104	
Percentage	75%	17%	8%		

Artifact 2 is an obsidian projectile point. The point is diamond shaped with a biconvex transverse cross-section and measures 4.1 cm in total length, 2.7 cm at maximum width, and 1.2 cm in maximum thickness. There appears to be some bifacial edge retouching with pronounced serration on one side. The proximal end appears to be partially broken off.

Artifact 3 is a rhyolite core containing roughly 5 percent cortex. It measures 8.1 cm in length, 4.0 cm in width, and 2.5 cm in thickness.

Artifact 4 is a basalt projectile point base and midsection fragment. The point measures 3 cm in total length, 2.3 cm at maximum width, and 1.1 cm in maximum thickness. The point is triangular in cross-section, with a concave base and no shoulders, and the distal end has been broken. The concave base and lanceolate shape are consistent with a Humboldt concave-base type, although the point's overall thickness and rough percussion flaking suggest that it may be a preform. Dates ranging from 4,000 BP to 1,400 BP or later have been assigned to Humboldt points in California and the western Great Basin.[1]

Artifact 5 is a round granite unifacial unshaped cobble mano with a single surface. It measures 9.8 cm in length, 8.4 cm in width, and 5.5 cm in thickness.

1 Justice, Noel D. 2002. Stone Age Spear and Arrow Points of California and the Great Basin. Bloomington, IN: Indiana University Press, p. 156.

Artifact 6 is a rhyolite project point tip fragment. The point is snapped at the center and missing the proximal half. The tip is triangular and has been unifacially retouched. The point measures 1.9 cm at maximum length, 1.4 cm at maximum width, and 0.1 cm at maximum thickness.

TY-Site-4

TY-Site-4 is composed of a single granitic boulder with one observed milling surface. The boulder is a large, coarse granitic boulder measuring 267 cm in length, 243 cm in width, and 112 cm in height. The milling surface is a saucer-shaped bedrock mortar with a diameter of 13 cm and a depth of 1.5 cm. No materials were observed in the milling surface. The boulder is set in an alluvial slope with 100 percent exposure,

TY-Isolate-1

TY-Isolate-1 consists of a single projectile point found in a gently sloping area of sparse creosote and scrub bushes. The lanceolate point is of white chert with a concave base. The point has a maximum length of 5.8 cm, is 5.5 cm long from tip to base center, 2.5 cm in maximum width, 2.0 cm in base width, and has maximum thickness of 0.5 cm. The point is slightly curved in profile. It is not fluted, although the concave base has been thinned with a series of short pressure flakes. No basal grinding is evident. No other artifacts were found in the vicinity of TY-Isolate-1.

The point may be an example of the Black Rock Concave Base type originally described by Clewlow[2] and more recently discussed in detail by Justice.[3] This type has been attributed to the period 7,000–9,000 BP; however, it may have appeared as early as 13,000 BP and most likely overlapped temporally with fluted technologies such as Clovis and Folsom. Clewlow and Justice note that most points of this type are made of a variety of chert, as is this isolate. The point displays other attributes of the Black Rock Concave Base type, such as short basal thinning scars, excurvate lateral margins that contract towards the base, and a thin, flat profile. Of the Black Rock Concave Base points analyzed by Clewlow (and used by Clewlow to define the type), the average maximum length was 6.3 cm, the average maximum width was 2.4 cm, and the average maximum thickness was 0.4 cm.[4] TY-Isolate-1 is very similar in size—this isolate is only slightly larger than the average width and thickness of Clewlow's sample and displays the characteristic thin profile of Black Rock Concave Base points.

Alternatively, the point bears some resemblance to the Humboldt Concave Base type. Like the Black Rock Concave Base type, Humboldt Concave Base points are lanceolate-shaped with triangular concave bases. However, points assigned as Humboldts have a wide range of basal widths, typically do not display short basal thinning scars, and are generally biconvex and thicker in profile, unlike this isolate.

2 Clewlow, William C. 1968. "Surface Archaeology in the Black Rock Desert, Nevada" in Reports of the University of California Archaeological Survey No. 73: Papers on the Archaeology of Western Great Basin. Berkeley: University of California

3 Justice, Noel D. 2002. Stone Age Spear and Arrow Points of California and the Great Basin. Bloomington, Indiana.

4 Clewlow, William C. 1968. "Surface Archaeology in the Black Rock Desert, Nevada" in Reports of the University of California Archaeological Survey No. 73: Papers on the Archaeology of Western Great Basin. Berkeley: University of California. P. 15.

Regionally, Black Rock Concave Base points have been found throughout the western Great Basin, but are most common in Nevada.[5] If this point is an example of the Black Rock type, it would represent the southwesternmost extent of the type's distribution and could be one of the older artifacts found to date in the Antelope Valley area.

Due to the possible antiquity and rarity of TY-Isolate-1, Sapphos archaeologists conducted limited subsurface testing to determine whether buried cultural materials were associated with the projectile point. A total of five STPs were placed in the vicinity of TY-Isolate-1. One STP was placed directly where the projectile point was located, and the four remaining STPs were placed 5 meters from the projectile point in each cardinal direction. Each STP measured 30 cm in diameter and was excavated in 10-cm levels to a minimum depth of 30 cm. All excavated soils from the STPs were screened by level through a 1/8-inch (3-millimeter) wire mesh screen.

The STPs revealed no evidence of subsurface cultural deposits at the location of the isolate or in the immediate vicinity. Given the lack of subsurface materials and the lack of any artifacts on the surface, other than the projectile point itself, it is assumed that TY-Isolate-1 is an isolated find that is not associated with a larger cultural deposit.

At the request of BLM archeologist Mr. Donald Storm, TY-Isolate-1 was collected and is currently curated at the Maturango Museum in Ridgecrest, California.

Historic-period Resources

The results of the Class I literature review indicate that no historic-period archaeological resources have previously been recorded within the APE, although 18 historic-period archaeological sites have been recorded within a 1-mile radius of the project area. The majority of these previously recorded resources are low rock mounds of unknown function that were recorded by Sapphos in 2006 during surveys for an adjacent wind project.

The results of the three Class III field surveys resulted in the recording of two historic-period sites and four historic-period isolates (Table 3.4-4). None of the resources are located within the project's DIZ.

5 Justice, Noel D. 2002. Stone Age Spear and Arrow Points of California and the Great Basin. Bloomington, Indiana.

TABLE 3.4-4
NEWLY RECORDED HISTORIC-PERIOD ARCHAEOLOGICAL RESOURCES

Primary #	Description	Within Direct Impact Zone	Within the APE
TY-Site-5	Refuse scatter composed of cans and glass fragments	No	Yes
TY-Site-6	Debris scatter composed of barrel hoops, glass fragments, metal brackets, milled lumber, porcelain fragments and cans	No	Yes
TY-Isolate-2	Standard Oil metal axle grease lid and milled wood fragments	No	Yes
TY-Isolate-3	"Boyco" hand-soldered canteen	No	Yes
TY-Isolate-4	Historic rock ring with charcoal, metal fragments and amethyst glass fragment	No	Yes
TY-Isolate-5	Hand soldered lard pail	No	Yes

SOURCE: Sapphos, 2013

TY-Site-5

TY-Site-5 is a late-historic-period refuse scatter composed of one concentration. The concentration contains 43 cans and 8 fragments of clear glass. Cans include 15 cone-top beverage cans, 5 large sanitary cans, 7 smaller sanitary cans, 3 round cans with internal friction lids and 3 rectangular cans. Partial labels include the logos "MINUTE MAID CORP," "MJB COFFEE," "MIDWAY INC," and "Cantrell & Cochrane//Root Beer." Based upon the cone-top beverage cans and label information, the site likely dates from 1935 to 1955.[6] The homogeneity of the assemblage suggests that the site represents a single-episode trash dump.

TY-Site-6

TY-Site-6 is a historic debris scatter composed of one sparse artifact concentration. The concentration contains 23 fragments of milled lumber in various sizes; 12 small circular metal washer tacks; four barrel hoops; 20 brown glass fragments; 10 amethyst glass fragments; five clear glass fragments; three decorated porcelain fragments; one rectangular whetstone fragment; one metal shovel blade fragment embossed "RODGERS"; one sanitary can; one hole-in-top, punched opened can; and two steel brackets that appear to be from a folding cot.

The presence of amethyst glass indicates a date range of approximately 1880 to 1920.[7] The variety of materials present in the assemblage, including household goods, food containers,

6 Miller, George. 2000. "Telling Time for Archaeologists." Northeast Historical Archaeology, 29:1–22.

7 Lockhart, Bill. 2006. "The Color Purple: Dating Solarized Amethyst Container Glass." Historical Archaeology, 40(2):45–56.

hardware, tools, and milled lumber, suggests that this site may represent a historic-period campsite.

TY-Isolate-2

The isolate consists of a single galvanized metal bucket lid embossed with "MICA AXLE GREASE\\TRADE [IMAGE OF WAGON WHEEL] MARK\\STANDARD OIL CO.\\ (INCORPORATED)" and measuring 12 inches in diameter. Approximately 20 cut sheet metal scraps with rivet holes with varying dimensions are located near the bucket lid.

Mica Axle Grease was utilized primarily as grease for wagon wheels, with the discontinuation of this brand coinciding with the breakup of Standard Oil in 1911.[8]

The fragments of scrap metal may have been a part of a discarded wagon. No traces of milled wood were found in the area.

TY-Isolate-3

TY-Isolate-3 is a round, hand soldered canteen measuring 10 inches in diameter and 3 inches in thickness with a 1½-inch diameter screw cap and appears hand-soldered. A bullet hole is present on the body. The cap is embossed with the logo "BOYCO."

Boyco is the abbreviated name for the Pinney and Boyle Manufacturing Company of Los Angeles, California. The company was formed by Charles L. Pinney and Willis J. Boyle in 1899 and produced sheet metal goods such as canteens, luggage carriers, garbage cans, and ovens.[9] No firm date could be ascertained on the closure of the company; however, the Boyco name appears to have disappeared by the 1950s.[10]

TY-Isolate-4

TY-Isolate-4 is a small historic rock ring and debris scatter composed of a single concentration of metal fragments, one amethyst glass fragment, and a tobacco tin fragment, and is set in a small ephemeral wash. A rock ring is located 28 feet east of the artifact concentration and is composed of 30 local angular rocks. The rock ring measures 105 inches (east-west) and 157 inches (north-south) on the outside diameters. Charcoal is present within the ring and small fragments of milled wood are present within the ring and toward the concentration. The rock ring appears to have been recently utilized.

TY-Isolate-5

8 Folsom, Burton. 1988. John D. Rockefeller and the Oil Industry. Available at: http://www.fee.org/the_freeman/detail/john-d-rockefeller-and-the-oil-industry

9 Guinn, James Miller. 1915. A History of California and an Extended History of Los Angeles and Environs, Also Containing Biographies of Well-known Citizens of the Past and Present. n.p., Vol. III. pp. 899–900.

10 Boyco Canteens and Carriers. 1 May 1920. Advertisement for Boyco, in "The Mohave County Miner and Our Mineral Wealth," 5. Available at: http://chroniclingamerica.loc.gov/lccn/sn96060547/1920-05-01/ed-1/seq-6.pdf

TY-Isolate-5 is a hand-soldered rusted steel pail measuring 7½ inches in diameter and 6½ inches tall. Remnants of a soldered handle are visible on the sides of the pail and the external friction lid is missing. The face is embossed "ARMOUR PACKING Co.//CHOICE FAMILY LARD//KANSAS CITY, MO."

The Armour Packing Company of Kansas City was started in 1884 by Simeon B. Armour, Alexander W. Armour, and Phillip Armour and produced a variety of cattle and hog products.[11] The company changed their name to Armour and Company in 1910. Consequently, TY-Isolate-5 was produced sometime between 1884 and 1910.

Eligibility of Prehistoric and Historic Archaeological Resources

The Class III survey resulted in the re-documentation of one previously recorded prehistoric site (CA-KER-1906) and the documentation of four new prehistoric sites (TY-Site-1, TY-Site-2, TY-Site-3, and TY-Site-4), one new prehistoric isolate (TY-Isolate-1), two new historic-period sites (TY-Site-5 and TY-Site-6), and three historic-period isolates (TY-Isolate-2, TY-Isolate-3, TY-Isolate-4, and TY-Isolate 5). Recommendations of NRHP eligibility and potential for effects to each resource are provided in Table 3.4-5, NRHP Eligibility Recommendations and Potential for Effects to Resources, and described below.

TABLE 3.4-5
NRHP ELIGIBILITY RECOMMENDATIONS AND POTENTIAL FOR EFFECTS TO RESOURCES

Resource	Period	NRHP Eligibility Recommendation	Potential for Effects
CA-KER-1906	Prehistoric	Not eligible	None
TY-Site-1	Prehistoric	Not eligible	None
TY-Site-2	Prehistoric	Not eligible	None
TY-Site-3	Prehistoric	Potentially eligible	None
TY-Site-4	Prehistoric	Not eligible	None
TY-Site-5	Historic	Not eligible	None
TY-Site-6	Historic	Not eligible	None
TY-Isolate-1	Prehistoric	Not eligible	None
TY-Isolate-2	Historic	Not eligible	None
TY-Isolate-3	Historic	Not eligible	None
TY-Isolate-4	Historic	Not eligible	None
TY-Isolate-5	Historic	Not eligible	None

CA-KER-1906

This site is an isolated bedrock milling station that is not associated with other features or surface artifacts. The site was recorded in full detail during the current effort, and as an isolated

11 "Meat Packing Gave City Large Industry." 24 November 1985. The Kansas City Kansan, P2A.

archaeological feature it has little data potential beyond that documented during its recordation. Thus, site CA-KER-1906 is recommended to be not eligible for the NRHP under Criterion D.

TY-Site-1

This site is an isolated bedrock milling station that is not associated with other features or surface artifacts. The site was recorded in full detail during the current effort, and as an isolated archaeological feature it has little data potential beyond that documented during its recordation. Thus, site TY-Site-1 is recommended to be not eligible for the NRHP under Criterion D.

TY-Site-2

This site is an isolated bedrock milling station that is not associated with other features or surface artifacts. The site was recorded in full detail during the current effort, and as an isolated archaeological feature it has little data potential beyond that documented during its recordation. Thus, site TY-Site-2 is recommended to be not eligible for the NRHP under Criterion D.

TY-Site-3

This site consists of multiple bedrock milling stations, portable ground-stone tools, a lithic scatter consisting of multiple loci, and several flaked stone tools, including at least one temporally diagnostic projectile point type. As such, the site appears to represent multiple activity areas and relatively intensive prehistoric use, and thus has good potential to provide scientifically important information. Although no subsurface testing was conducted during the present effort, the lack of surface disturbances and presence of intact, discrete loci suggest that the site has good potential for containing subsurface deposits. Thus, site TY-Site-3 is recommended potentially eligible for the NRHP under Criterion D, and should be treated as eligible with respect to the proposed Project and any additional, future undertakings. The site is currently outside of the proposed Project's footprint, or DIZ. However, should the proposed Project be redesigned so that TY-Site-3 falls within the revised DIZ, a formal determination of NRHP eligibility, including subsurface testing, intensive mapping, and laboratory analysis, should be conducted.

TY-Site-4

This site is an isolated bedrock milling station that is not associated with other features or surface artifacts. The site was recorded in full detail during the current effort, and as an isolated archaeological feature it has little data potential beyond that documented during its recordation. Thus, site TY-Site-4 is recommended to be not eligible for the NRHP under Criterion D.

TY-Site-5

This site is a small collection of late historic cans and glass likely deposited in a single event. The site appears limited to surface deposits as there is no indication of purposeful earthmoving activities (e.g., trash pits or privies) that would have buried additional features or artifacts, and

therefore it has little data potential beyond that documented during its recordation. Thus, site TY-Site-5 is recommended to be not eligible for the NRHP under Criterion D.

TY-Site-6

This site is a small collection of historic debris likely associated with a small, temporary campsite. The site appears limited to surface deposits as there is no indication of purposeful earthmoving activities that would have buried additional features or artifacts, and therefore it has little data potential beyond that documented during its recordation. Thus, site TY-Site-6 is recommended to be not eligible for the NRHP under Criterion D.

TY-Isolate-1

Due to the possible antiquity and rarity of TY-Isolate-1, Sapphos archaeologists conducted limited subsurface testing to determine whether buried cultural materials were associated with the projectile point. Subsurface testing did not reveal any additional cultural deposits and the isolate was collected for curation. Consequently, due to the lack of any associated cultural materials and because the isolate's data potential has been fulfilled through collection, TY-Isolate-1 is not recommended eligible for inclusion in the NRHP under Criterion D.

TY-Isolate-2, TY-Isolate-3, TY-Isolate-4, and TY-Isolate-5

These are all historic-period isolates that lack contextual integrity and are not associated with any other cultural materials. The isolates therefore lack the contextual integrity necessary to meet the criteria for NRHP eligibility, and therefore do not require avoidance or mitigation under Section 106 of the NHPA.

Summary of Cultural Resources

The Cultural Resource Class III intensive field surveys identified six prehistoric archaeological resources and six historic-era archaeological resources within the project area. This total includes one previously recorded site (CA-KER-1906, which was re-located); four new prehistoric sites (TY-Site-1, TY-Site-2, TY-Site-3, and TY-Site-4), one prehistoric isolate (TY-Isolate-1).); historic sites TY-4 and TY-5, and isolates TY-2, TY-3, TY-4, and TY-5.

None of these resources are located within the proposed Project's Direct Impact Zone, and as such, will not be affected by the construction , operation, or decommissioning of the project.). Although these resources do occur within the APE, no direct impacts to these resources are expected because of the engineered design consideration was made to avoid them.

3.4.2 Applicable Regulations, Plans and Standards

Numerous laws and regulations require federal, state, and local agencies to consider the effects a project may have on cultural resources. These laws and regulations stipulate a process for compliance, define the responsibilities of the various agencies proposing the action, and prescribe

the relationship among other involved agencies (e.g., State Historic Preservation Officer (SHPO) and the Advisory Council on Historic Preservation (ACHP). The NHPA and the CRHR, PRC §5024, are the primary federal and state laws governing and affecting preservation of cultural resources of national, state, regional, and local significance. The applicable regulations for the proposed Project are discussed below.

Federal

National Historic Preservation Act Section 106

Section 106 of the NHPA (16 USC § 470f) requires a federal agency with jurisdiction over a proposed federal action (referred to as an "undertaking" under the NHPA) to evaluate the potential effects of the undertaking on historic properties and seek to resolve such adverse effects. A federal agency also provides the ACHP an opportunity to comment on the undertaking. The Project is an undertaking with the potential to affect historic properties, 36 CFR § 800.3(a), and therefore is subject to the requirements of Section 106.

The term "historic properties" refers to "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the [NRHP]" 36 CFR § 800.16(*l*)(1). The implementing regulations (36 CFR Part 800) describe the process for identifying and evaluating historic properties, for assessing the potential adverse effects of federal undertakings on historic properties, and seeking to develop and evaluate alternatives or modifications to the proposed undertaking that could avoid, minimize, or mitigate adverse effects. The steps of the Section 106 process must be accomplished through consulting with the SHPO, Indian tribes, local governments, and other consulting parties. The agency also must provide an opportunity for public involvement. Consultation with Indian tribes regarding issues related to Section 106 of the NHPA, as well as other authorities like NEPA, must recognize the government-to-government relationship between the Federal government and Indian tribes. (See Section 5 Consultation, Coordination, and Public Involvement)

To be eligible for listing in the NRHP, a resource must be significant in American history, architecture, archaeology, engineering, or culture. Districts, sites, buildings, structures, and objects of potential significance must meet one or more of the following four established criteria (36 CFR §60.4):

A. Are associated with events that have made a significant contribution to the broad patterns of our history;

B. Are associated with the lives of persons significant in our past;

C. 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. Have yielded, or may be likely to yield, information important in prehistory or history.

Unless the property possesses exceptional significance, it must be at least 50 years old to be eligible for National Register listing (U.S. Department of the Interior, 1990). In addition to meeting the criteria of significance, a property must have integrity. Integrity is defined as "the ability of a property to convey its significance" (U.S. Department of the Interior, 1990). The National Register recognizes seven qualities that, in various combinations, define integrity. To retain historic integrity a property must possess several, and usually most, of these seven aspects. Thus, the retention of the specific aspects of integrity is paramount for a property to convey its significance. The seven factors that define integrity are location, design, setting, materials, workmanship, feeling, and association.

As stated above, the goal of Section 106 consultation is to identify potentially affected historic properties, assess effects to such properties, and seek ways to avoid, minimize, or mitigate any adverse effects on such properties. Historic properties are not required to be formally listed on the NRHP – i.e., the can be determined to be eligible by the Agency. The Section 106 process does not require the preservation of historic properties, but instead, it is a procedural requirement mandating that federal agencies to take into account effects to historic properties from an undertaking prior to approval.

American Indian Religious Freedom Act

American Indian Religious Freedom Act (AIRFA) (42 USC §1996), enacted in 1978, establishes a policy of federal protection for traditional American Indian religious freedoms, including access to sacred sites and the freedom to worship through traditional rites.

Executive Order 13007

Executive Order 13007 (61 FR 26771; May 29, 1996) directs federal agencies, to the extent practicable, permitted by law, and not clearly inconsistent with essential agency functions: to accommodate access to, and ceremonial use of, Indian sacred sites by Indian religious practitioners and to avoid adversely affecting the physical integrity of sacred sites. It also requires agencies to maintain the confidentiality of sacred sites, where appropriate.

Native American Graves Protection and Repatriation Act

Requirements for responding to discoveries of Native American human remains and associated funerary objects on federal land are addressed under the Native American Graves Protection and Repatriation Act (NAGPRA) (Public Law 101-601) and its implementing regulations found at 43 CFR Part 10. If human remains or associated funerary objects are discovered on public lands within the Project area, the BLM will comply with the law and regulations by determining lineal descendants and culturally affiliated Indian tribes and by carrying out appropriate treatment and disposition of the discovered remains, including transfer of custody.

CDCA Plan

The CDCA Plan requires that all areas within the CDCA be managed to preserve and protect archaeological values and that, where applicable, NHPA implementing regulations, described

above, be implemented. Additionally, the CDCA Plan requires that Native American cultural and religious values be preserved where relevant and protected where applicable, and that Native American groups be consulted (BLM, 1999).

State of California

Office of Historic Preservation

The State of California implements the NHPA through its statewide comprehensive cultural resources surveys and preservation programs. The Office of Historic Preservation (OHP), as an office of the California Department of Parks and Recreation, implements the policies of the NHPA on a statewide level. The OHP also maintains the California Historical Resources Inventory. The SHPO is an appointed official who implements historic preservation programs within the state's jurisdictions.

California Register of Historical Resources

The California Register of Historical Resources (CRHR) is "an authoritative listing and guide to be used by State and local agencies, private groups, and citizens in identifying the existing historical resources of the State and to indicate which resources deserve to be protected, to the extent prudent and feasible, from substantial adverse change" (Pub. Res. Code §5024.1[a]). The criteria for eligibility for the California Register are based upon National Register criteria (Pub. Res. Code §5024.1[b]; 14 Cal. Code Regs. §4850 et seq.). Certain resources are determined by the statute to be automatically included in the California Register, including California properties formally determined eligible for, or listed in, the National Register.

To be eligible for the California Register, a prehistoric or historic-period property must be significant at the local, state, and/or federal level under one or more of the following four criteria. The resource:

1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
2. Is associated with the lives of persons important in our past;
3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
4. Has yielded, or may be likely to yield, information important in prehistory or history.

An eligible resource for the California Register must meet one of the criteria of significance described above, and retain enough of its historic character or appearance (integrity) to be recognizable as a historical resource and to convey the reason for its significance.

Additionally, the California Register consists of resources that are listed automatically and those that must be nominated through an application and public hearing process. The California Register automatically includes the following:

1. California properties listed on the National Register and those formally Determined Eligible for the National Register;
2. California Registered Historical Landmarks from No. 770 onward; and,
3. Those California Points of Historical Interest that have been evaluated by the OHP and have been recommended to the State Historical Commission for inclusion on the California Register.

Other resources that may be nominated to the California Register include:

1. Historical resources with a significance rating of Category 3 through 5 (those properties identified as eligible for listing in the National Register, the California Register, and/or a local jurisdiction register);
2. Individual historical resources;
3. Historical resources contributing to historic districts; and,
4. Historical resources designated or listed as local landmarks, or designated under any local ordinance, such as an historic preservation overlay zone.

3.5 Environmental Justice

Title VI of the Civil Rights Act of 1964 (Public Law 88-352, 78 Stat.241) prohibits discrimination on the basis of race, color, or national programs in all programs or activities receiving federal financial assistance. This section of the DEIS/PA includes consideration of the demographic composition of the affected area so a determination can be made as to whether a high proportion of minority or low-income populations are present in the area affected by the Proposed Action.

3.5.1 Environmental Setting

Minority Populations

According to the Council on Environmental Quality (CEQ), minority individuals are defined as members of the following groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic. A minority population, for the purposes of environmental justice, is identified when the minority population of the potentially affected area is greater than 50 percent or meaningfully greater than the percentage of the minority population in the general population or other appropriate unit of geographical analysis (CEQ, 1997).[1]

Low-Income Populations

Unlike the CEQ (1997) guidance on minority populations, none of the environmental justice guidance documents contain a quantitative definition of how many low-income individuals comprise a low-income population. In the absence of guidance, for this analysis the density used to identify minority populations (i.e., 50 percent or greater) was also used as a minimum to identify low-income populations. A low-income population may be present if the low-income population percentage of the affected area is "meaningfully greater" than the low-income population percentage in the general population/specifically, if the proportion of individuals living under the poverty line is 100 percent or more than that of the general population. Table 3.5-1 below, provides the minority population, median household income, and proportion of the population living below the poverty level for 060290060.05 Census Tract in which the Project is located, the City of Tehachapi, and the County of Kern. According the Census data, the minority population within Census Track 060290060.05 is 11.1 percent which is less than 50 percent of the total population. However, the City of Tehachapi and the County of Kern as a whole have minority populations of more than 50 percent of their total population and represent communities of concern. Moreover, Census Tract 06029006 0.05 has a proportion of low-income residents (percentage living below the poverty level) of 8.7 percent, which is under half that for Kern County as a whole. Consequently, Census Tract 060290060.05 is not identified as a low income population.

[1] According to the CEQ guidelines, "Minority" is defined as all persons except non-Hispanic whites. In other words, minority is defined as all racial groups other than white, and all persons of Hispanic origin, regardless of race.

TABLE 3.5-1
RACIAL AND INCOME CHARACTERISTICS FOR RESIDENTS WITHIN THE ENVIRONMENTAL JUSTICE STUDY AREA

Geographic Area (Census Tract)	Total Population	Total Minority (Percentage Minority)		Median Household Income	Proportion of Population Living Below Poverty Level (Percentage Low-Income)
060290060.05*	11,596	1,284	11.1%	$56,188	8.7%*
Tehachapi	14,414	7,293	50.6%	$49,668	12.0%
Kern County	839,631	515,533	61.4%	$46,938	22.2%

SOURCE: U.S. Census, 2010; U.S. Census, 2000*.

3.5.2 Applicable Regulations, Plans, and Standards

Federal

Executive Order 12898

Title VI of the Civil Rights Act of 1964 (Public Law 88-352, 78 Stat.241) prohibits discrimination on the basis of race, color, or national origin in all programs or activities receiving federal financial assistance. Executive Order 12898, "Federal Actions to address environmental justice in Minority Populations and Low-Income Populations," focuses federal attention on the environment and human health conditions of minority communities and calls on agencies to achieve environmental justice as part of this mission (59 Fed. Reg. 7629 (Feb. 16, 1994)). The order requires the U.S. Environmental Protection Agency (EPA) and all other federal agencies (as well as state agencies receiving federal funds) to develop strategies to address this issue. The agencies are required to identify and address any disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and/or low-income populations.

The CEQ has oversight responsibility for the Federal Government's compliance with Executive Order 12898 and NEPA. The CEQ, in consultation with the USEPA and other agencies, has developed guidance to assist Federal agencies with their NEPA procedures so that environmental justice concerns are effectively identified and addressed. According to the CEQ's "Environmental Justice Guidance under the National Environmental Policy Act," agencies should consider the composition of the affected area to determine whether minority populations or low-income populations are present in the area affected by the Proposed Action, and if so whether there may be disproportionately high and adverse environmental effects (CEQ, 1997).

Bureau of Land Management Land Use Planning Handbook, Appendix D

BLM Land Use Planning Handbook, H-16010-1, Appendix D, Section IV (Environmental Justice Requirements) provides guidance for assessing potential impacts on minority and low-income population as they relate to environmental justice. It also describes variables such as lifestyles, beliefs and attitudes, and social organizations with respect to environmental justice. These

variables were not evaluated in this analysis, as they cannot be readily quantified for the purposes of impact assessment and do not provide any additional analytical value in terms of evaluating potential environmental justice impacts.

Bureau of Land Management California Desert Conservation Area Plan

The Project would be located within the boundaries of the BLM CDCA Plan. The CDCA Plan covers 25 million acres of land and serves as the context for BLM's land-use management of these public lands (BLM, 2007). The BLM West Mojave Plan serves as a Habitat Conservation Plan and CDCA plan amendment (BLM, 2005b). A review of both the CDCA Plan and the West Mojave Plan indicated that no specific requirements regarding Environmental Justice were identified beyond those discussed by the BLM within its Land Use Planning Handbook, Appendix D (BLM, 2007, 2005a, and 2005b).

State and Local

No State regulations, plans, or standards related to Environmental Justice would be applicable to the TWP.

Kern County

Kern County General Plan (KCGP), Revised September 2009

The policies, goals, and implementation measures in the KCGP for population and housing applicable to the Project are provided below. The KCGP contains additional policies, goals, and implementation measures that are more general in nature and not specific to development such as the Project. Therefore, they are not listed below, but, as stated in Chapter 2, "Introduction," all policies, goals, and implementation measures in the KCGP are incorporated by reference.

Chapter 1. Land Use, Open Space, and Conservation Element – 1.0 General Provisions

Goal 1. Ensure that the County can accommodate anticipated future growth and development while maintaining a safe and healthful environment and a prosperous economy by preserving viable natural resources, guiding development away from hazardous areas, and assuring the provision of adequate public services.

Policy 6. The County shall ensure the fair treatment of people of all races, cultures, incomes and age groups with respect to the development, adoption, implementation and enforcement of land use and environmental programs.

Policy 7. In administering land use and environmental programs, the County shall not deny any individual or group the enjoyment of the use of land due to race, sex, color, religion, ethnicity, national origin, ancestry, lawful occupation or age.

3.6 Lands and Realty

This section describes existing land use conditions in the Tylerhorse Wind Project (TWP) area. The applicable BLM Master Title Plats (MTPs), Historical Indices (HIs), automated Lands and Minerals Legacy Rehost 2000 (LR2000), and Automated Mining Claims systems were reviewed to obtain information related to pending and authorized lands and minerals uses on the BLM-administered land affected by the Project. Land use is 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, ROWs, claims, leases, licenses, permits, etc… BLM-administered lands are classified according to the sensitivity of resources and kinds of uses for each geographic area through the CDCA Plan.

3.6.1 Environmental Setting

Existing Land Uses

In addition to the pending ROW application for the TWP (CACA 51561), only the following authorized uses of record were identified on the Project lands (Township 10 North, Range 15 West, Section 24; Section 26, lots 1 to 8, inclusive; and Section 28, lot 1 and SW 1/4; SE 1/4) :

1. CACA 13978 – USFS Angeles National Forest – Pacific Crest Trail along the eastern edge of lot 1, section 28; dimensions approximately 1,320 feet by 20 feet;

2. CACA 39193 – United Honeybees, Inc. – short-term ROW authorizing up to 115 movable apiary hives scattered throughout 11 sections of land within 7 townships, including the southwestern part of section 24;

3. CACA 45552 – Heartland Wind, LLC – wind testing and monitoring ROW covering the same land on which the TWP would be constructed; and

In connection with the TWP ROW grant application, BLM will segregate approximately 1,207 acres of public lands, subject to valid existing rights, from appropriation under public land law including the Mining Law of 1872, as amended, for a period of two years beginning July 15, 2011 (excluding the Material Sales Acts). The BLM determined the segregation necessary to ensure the orderly administration of the public lands while it processes Heartland Winds' ROW application.

No mining claims, mineral materials sales contracts, mineral materials free use permits, or mineral leases were identified as existing on the Project lands.

In addition to the adjacent MWEP, PWEP and CREP, additional uses on private land within roughly a 15-mile radius include three private airstrips, one public airstrip, one public airport facility, the western boundary of Edwards Air Force Base, and Willow Springs International Motorsports Park (PWEP, Draft Environmental Impact Report, 2010).

Land Ownership/Management

The entire Project site, approximately 1,207 acres of land, is comprised of public lands under the jurisdiction of the BLM. The BLM land use designations established in the CDCA Plan would apply to the TWP site since it is BLM-administered land. The KCGP designations and zoning would only apply to the surrounding private land.

BLM Land Use Designations

All public lands in the CDCA under BLM administration have been designated geographically into four multiple-use classes (MUC) through the CDCA Plan, except for approximately 314,000 acres which are identified as Unclassified. Lands are placed into one of four MUCs, based on the sensitivity of the resources and types of uses for each geographic area. The CDCA Plan describes the MUC Classes as follows:

> **Class C:** Multiple-use Class C (Controlled) has two purposes. First, it shows those areas which are being "preliminarily recommended" as suitable for wilderness designation by Congress. This process is explained in the Wilderness Element of the CDCA Plan (BLM, 1980). Second, it is used to show those areas formally designated as "wilderness" by Congress. The Class C Guidelines are different from the guidelines for other classes. They summarize the kinds of management likely to be used in these areas when and if the areas are formally designated wilderness by Congress.
>
> **Class L:** Multiple-use Class L (Limited Use) protects 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.
>
> **Class M:** Multiple-use Class M (Moderate Use) is based upon a controlled balance between higher-intensity use and 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. Class M management is also designed to conserve desert resources and to mitigate damage to those resources which permitted uses may cause.
>
> **Unclassified Lands:** Scattered and isolated parcels of public land in the CDCA that have not been placed within multiple-use classes are "unclassified" land. These parcels will be managed on a case-by-case basis, as explained in the Land Tenure Adjustment Element of the CDCA Plan.

The CDCA Plan Elements provide specific application of the MUC guidelines for specific resources or activities about which the public has expressed significant concern.

The CDCA lands in Kern County are assigned to MUC Classes in the proportions shown in Table 3.6-1 below.

TABLE 3.6-1
MULTIPLE-USE CLASS DESIGNATIONS

Class	Acreage	% of Total Planning Area Public Lands
C	576,858	38
L	550,087	36
M	399,024	26
I	0	0
U	1,886	<1
Total	***1,527,855***	***100***

The proposed TWP site (1,207 acres) is within this "Unclassified" designation.

Kern County General Plan Land Use Designations

Land use and planning decisions adjacent to the Project site are regulated by the KCGP. The KCGP contains goals, objectives and policies and provides an overall foundation for establishing land use patterns. The KCGP includes map code designations to provide for a range of permitted land uses within specific geographic areas of the County. The TWP land is designated as 1.1 State or federal land. The lands surrounding the TWP are designated as 8.3 Extensive Agriculture (minimum 20-acre parcel) and 8.5 Resource Management (minimum 20-acre parcel). (Kern County, 2012). The TWP would be within the Tehachapi Wind Resource Area (TWRA) as shown on Figure 3.6-1.

Kern County Zoning Designations

The Zoning Ordinance contains regulations through which the KCGP's provisions are implemented. In 1986, the Wind Energy (WE) Combining District was adopted as Chapter 19.46 of the Kern County Zoning Ordinance. The WE Combining District promotes development of wind energy in Kern County and may be combined with zoning district A-Exclusive Agriculture.

The TWP project site is on federal land, and therefore is not subject to County zoning requirements. However, the land is identified as OS (Open Space) by the County which is typically used to identify state or federal land. Adjacent lands are zoned A (Exclusive Agriculture) and A-WE (Exclusive Agriculture – Wind Energy Combining District).

In connection with the approval of the adjacent MWEP and the PWEP projects, a zoning change from A to A-WE was requested and approved for the lands adjacent to the TWP site that are encumbered by each project.

3.6.2 Applicable Regulations, Plans, and Standards

Federal

Federal Land Policy and Management Act (FLPMA) of 1976

The FLPMA establishes public land policy; guidelines for administration of public lands; and provides for the management, protection, development, and enhancement of public lands. FLPMA Title V, Section 501, establishes BLM's authority to grant ROWs for generation, transmission, and distribution of electrical energy (FLPMA, 2001). The BLM is responsible for responding to requests regarding the development of energy resources on BLM-administered lands in a manner that balances diverse resource uses and takes into account the long-term needs for renewable and non-renewable resources for future generations.

Bureau of Land Management

California Desert Conservation Area Plan

The CDCA encompasses 25 million acres in southern California designated by Congress in 1976 through the 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.

Unclassified lands under the CDCA Plan are managed on a case-by-case basis in accordance with the *Land Tenure Adjustment Element*. The *Land Tenure Adjustment Element* of the CDCA Plan discusses the acquisition and disposal of public lands to maximize the efficiency and consistency of public land management but site-specific proposals are not addressed. The TWP site is located on unclassified lands, and as such, the TWP site is available for disposal. The CDCA Plan states that unclassified parcels which do not to contain sensitive resources and would be better used for development purposes will be considered for disposal after appropriate inventories and consultation with local governments are completed. Unclassified land may be disposed of through competitive bid (sale) at fair-market value, land exchanges, or the land may be transferred to another entity through another action (e.g. Congressional direction, or through an existing law that allows transfer of Federal land).

Specific goals and objectives address alternative energy development in the *Energy Production and Utility Corridor Element* of the CDCA Plan. Goal three of this element is to "identify potential sites for geothermal, wind energy parks and power plants." Objectives include the development of a comprehensive wind-energy data acquisition program for the CDCA Plan. Plan amendment procedures are to provide for the coordination needed for ensuring rapid implementation of these important fuel-replacement alternative energy programs in an environmentally responsible manner. The Plan states that sites associated with power generation or transmission not specifically identified in the Plan must be considered through the Plan

Amendment process. Therefore, if a project is not previously identified as suitable in the Plan, authorization of the project would require an amendment to the CDCA Plan.

BLM Wind Energy Final Programmatic EIS

Consistent with national BLM policy, the EIS for the TWP is tiered to the Final Programmatic Environmental Impact State (PEIS) on Wind Energy Development on BLM-Administered Lands in the Western United States (BLM, 2005). As outlined in the Record of Decision (ROD) for Implementation of a Wind Energy Development Program and Associated Land Use Plan Amendments (BLM, 2005), the project-specific analysis tiers to the Wind Energy PEIS to focus on critical, site-specific issues of concern. BLM Instruction Memorandum IM 2009-043 (BLM 2008) identifies the BLM's preference for the use of EISs tiered to the PEIS, when feasible. The ROD of the PEIS establishes policies and best management practices (BMPs) for wind energy development activities on BLM-administered lands and establishes minimum requirements for mitigation measures (BLM, 2005). The BMPs contained in Section A.2.2 of Attachment A of the ROD, as revised by BLM Instruction Memorandum IM 2009-043 (Exhibit1), are incorporated into this Draft DEIS/PA.

Federal Aviation Administration, 2007

The Federal Aviation Administration (FAA) issues and enforces regulations related to air traffic control and the assignment and use of airspace. The FAA's regulations are found in the Federal Aviation Regulations (FAR). FAR Title 14, Part 77, establishes the standards for determining obstructions in navigable airspace, including height limitations on structures taller than 200 feet or within 20,000 feet (approximately 3.8 miles) of an airport.

The standards and notification requirements of FAR Title 14 Part 77 are intended to: (1) evaluate the effect of the construction or alteration of structures on airport operating procedures; (2) determine whether the construction or alteration would result in a potential hazard to air navigation; and (3) identify measures to enhance safety. The FAA requires notification through the filing of FAA Form 7460 1, Notice of Proposed Construction or Alteration, and Form 117–1, Notice of Progress of Construction or Alteration, if any of the following criteria are met due to implementation of a proposed action (Title 14 Part 77.13) (FAA, 2012):

> Any construction or alteration [of a structure or object] of more than 200 feet in height above the ground level at its site.
>
> Any construction or alteration [of a structure or object] of greater height than an imaginary surface extending outward and upward at one of the following slopes:
>
> a. 100 to 1 for a horizontal distance of 20,000 feet from the nearest point of the nearest runway of each airport with at least one runway more than 3,200 feet in actual length, excluding heliports.
>
> b. 50 to 1 for a horizontal distance of 10,000 feet from the nearest point of the nearest runway of each airport specified with its longest runway no more than 3,200 feet in actual length, excluding heliports.

c. 25 to 1 for a horizontal distance of 5,000 feet from the nearest point of the nearest landing and takeoff area of each heliport.

Any proposed highway, railroad, or other traverse way for mobile objects, with a height which would exceed the standards of Part 77.13(a)(1), (2) or (3).

When requested by the FAA, any construction or alteration [of a structure or object] that would be in an instrument approach area (defined in the FAA standards governing instrument approach procedures) and available information indicates it might exceed a standard of subpart C of this Part [Part 77].

Any construction or alteration of a structure or object located on a public use airport or heliport that meets the criteria of Part 77.13 (a)(5).

State

No State regulations associated with lands and realty uses or land use planning would be applicable to the proposed TWP project since the entire Project is to be located on BLM-administered land.

Local

Similarly, no local regulations associated with lands and realty uses or land use planning would be applicable to the proposed TWP since the entire Project is to be located on BLM-administered land. To connect to the power grid, the TWP will use ancillary facilities associated with both the MWEP and PWEP, which have already been approved by the Kern County Board of Supervisors on adjacent private lands subject to the applicable requirements of the KCGP, Kern County Airport Land Use Compatibility Plan, and Kern County Zoning Ordinance. While the TWP would use ancillary facilities already approved by Kern County for the MWEP and PWEP, it is unlikely that any additional authorization by Kern County would be necessary beyond perhaps a Conditional Use Permit for use of the MWEP's concrete batch plant. If, however, additional approval would be necessary, TWP would work closely with Kern County to ensure such approvals are requested and granted.

3.7 Livestock Grazing

3.7.1 Environmental Setting

This section describes the existing applicable livestock grazing guidelines specified by the BLM that pertain to the protection of sensitive resources, support facilities and vegetation manipulation, and are slightly different for Multiple Use Class lands. The CDCA Plan also includes a Livestock Grazing Element, which provides more specific application of multiple-use guidelines towards these resources.

Existing Grazing Allotments

The entirety of the proposed approximately 1,207-acre TWP site is located within the 7,871-acre Antelope Valley grazing allotment under the management of the BLM Ridgecrest Field Office (BLM, 2005). The current authorization is for ephemeral sheep grazing under Section 15 of the Taylor Grazing Act. The Antelope Valley rangeland allotment has been authorized since 1980, in accordance with the CDCA Plan, for ephemeral grazing in years that ephemeral forage production is considered sufficient. A 960-acre portion of the Antelope Valley allotment within the TWP site is currently permitted for grazing, but has not been grazed since 2008 (S. Fitton, personal communication, April 2, 2013; BLM , 2011b). On October 21, 2011, BLM issued the permittee of the 960-acre grazing allotment an official two-year notification that the permitted land is being considered for another purpose that could result in a partial or complete reduction of the permitted use (BLM, 2011c). The remaining approximately 247 acres of the Antelope Valley grazing allotment that is within the TWP site is not currently permitted for grazing.

3.7.2 Applicable Regulations, Plans, and Standards

Federal

The Taylor Grazing Act of 1934 (43 USC 315)

The Taylor Grazing Act of 1934 is intended to regulate grazing on public lands, with the exclusion of Alaska; prevent deterioration of rangeland by overgrazing; and provide for long-term management of grazing districts for the benefit of the livestock industry that utilized public rangelands (BLM, 2011a).

Federal Land Policy and Management Act of 1976 (FLMPA)

The FLMPA establishes public land policy; guidelines for administration; provides for the management, protection, development, and enhancement of public lands; and, per Title V, Section 501, establishes the BLM's authority to grant ROWs for generation, transmission, and distribution of electrical energy (BLM, 2001).

Public Rangelands Improvement Act (1978)

Public Rangelands Improvement Act establishes and reaffirms the national policy and commitment to inventory and identify current public rangeland conditions and trends; manage, maintain and improve the condition of public rangelands so that they become as productive as feasible for all rangeland values in accordance with management objectives and the land use planning process. This act also establishes the policy of protecting wild free-roaming horses and burros from capture, branding, harassment, or death, while at the same time facilitating the removal and disposal of excess wild free-roaming horses and burros which pose a threat to themselves and their habitat and to other rangeland values (PRIA, 1978).

California Desert Conservation Area Plan (CDCA) (1980, as amended)

The CDCA provides a comprehensive, long-range plan with goals and specific actions for the management, use, development, and protection of the resources and public lands within the CDCA, and it is based on the concepts of multiple use, sustained yield, and maintenance of environmental quality.

West Mojave Plan (WEMO) (2006)

The WEMO is a habitat conservation plan and CDCA Plan amendment that contains more than nine million acres of land north of the Los Angeles metropolitan area within Inyo, Kern, Los Angeles, and San Bernardino counties. The WEMO is aimed at presenting a comprehensive conservation and protection strategy for nearly 100 sensitive plants, animals, and habitat communities, including the desert tortoise and Mojave ground squirrel; and providing a concise framework for complying with the California Endangered Species Act and the Federal Endangered Species Act.

BLM Instruction Memorandum Number 2011-181 (2011)

The BLM Instruction Memorandum Number 2011-181 clarifies when BLM Field Offices will notify a grazing permittee/lessee that a solar or wind energy development application may affect a livestock grazing operation and requires that when public lands are disposed of or devoted to a public purpose that precludes livestock grazing, the permittee/lessee shall be given two years' prior notification (except in cases of emergency) before the grazing permit/lease and grazing preference may be cancelled. The memorandum addresses potential mitigation and compensation strategies and the relationship of energy application steps/decisions with grazing administrative steps/decisions. The memorandum also includes a discussion of mitigation and compensation strategies that address loss of forage, access for management purposes, or other items, to provide for expeditious processing of the application for solar or wind development. According to the memorandum, the applicant and the permittee/lessee should be strongly encouraged to enter into an agreement that addresses mitigation and compensation strategies to be submitted concurrent with the Plan of Development, but the BLM will not directly participate in these discussions. The memorandum specifies that the United States is not responsible for any mitigation or compensation agreed upon by the parties in these agreements.

State

No State regulations associated with livestock grazing would be applicable to the proposed TWP project.

Local

Similarly, no local regulations associated with livestock grazing would be applicable to the proposed TWP project.

3.8 Mineral Resources

This section discusses mineral resources potentially impacted by the proposed TWP. The study area addressed in this section includes lands that may be affected directly and/or indirectly by construction and operation of the Proposed Action.

3.8.1 Environmental Setting

Geologic Environment

Kern County contains numerous mining operations that extract diverse materials, including sand and gravel, stone, gold, dimensional stone, limestone, clay, shale, gypsum, pumice, decorative rock, silica, and specialty sand. Mineral resources are likely to occur within the Project area given its designation under the Kern County General Plan (KCGP) as Mineral and Petroleum (Kern County, 2012). The KCGP designate areas as Mineral and Petroleum (Map Code 8.4) that contain productive or potentially productive petroleum, natural gas, geothermal resources, and/or mineral deposits of regional and Statewide significance. Use of the areas subject to this designation is limited to activities directly associated with resource extraction. The Land Use, Open Space, and Conservation Element of the Kern County General Plan specifies that uses of areas designated as Mineral and Petroleum include but are not limited to the following: mineral and petroleum exploration and extraction, including aggregate extraction; extensive and intensive agriculture; mineral and petroleum processing (excluding petroleum refining); natural gas and geothermal resources; pipelines; power transmission facilities; communication facilities; equipment storage yards; and borrow pits (Kern County, 2009).

Existing 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, 2010a). Locatable minerals include hardrock 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; and salable minerals include common variety of materials such as sand, stone, and gravel (BLM, 2010b). These minerals categories are further discussed below, with regard to the Proposed Action site.

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 Proposed Action site located in the northwestern portion of the Mojave Desert Geomorphic Province of California. The Antelope Valley portion of the Mojave Desert, which encompasses the

site, is bordered on the north and west by the Tehachapi Mountains and the Garlock Fault and to the south by the San Gabriel and San Bernardino Mountains and the San Andreas Fault. The site is located within the Tylerhorse Canyon 7. 5" U. S. Geological Survey (USGS) Quadrangle and consists of three separate parcels. This land is located within Township 10 North, Range 15 West (South San Bernardino Meridian), within all of Section 24, and portions of Sections 26 (N112) and 28 (S1/2 of the SE1/4). The MRDS online database was reviewed for the proposed TWP site and vicinity, specifically for the geographic areas within an approximate six-mile radius. Results of this review are provided below in Table 3.8-1.

In addition, the State of California Division of Oil, Gas and Geothermal Resources maps show no oil or gas well fields or reserves in the TWP vicinity.

As indicated by Table 3.8-1, former, current, and prospective mining operations are located in the vicinity of the TWP site. No active or abandoned mines have been found directly on the TWP site however.

As mentioned above, the BLM groups minerals on federal lands into three distinct categories, each of which is addressed below for the Proposed Action site.

1. **Locatable Minerals.** There are no active mining claims for locatable minerals within the proposed TWP site and there is no locatable minerals activity within the boundaries of the proposed TWP site. Based on the geological environment and historical trends, the potential for occurrence of locatable minerals is low in this area.

2. **Leasable Minerals.** No oil, gas, or geothermal fields are located in the vicinity of the TWP site.

3. **Saleable Minerals / Mineral Materials.** Sand and gravel deposits are common throughout Kern County, including on the proposed TWP site and vicinity.

3.8.2 Applicable Regulations, Plans, and Standards

Federal

Mining and Mineral Policy Act of 1970

This act declared that the federal government policy is to encourage private enterprise in the development of a sound and stable domestic mineral industry and in orderly and economic development of mineral resources, research, and reclamation methods.

California Desert Conservation Area Plan

The CDCA Plan defines multiple-use classes for BLM-managed lands within the CDCA, which includes land area encompassing the proposed TWP site. With respect to geological resources, the CDCA Plan aims to maintain the availability of mineral resources on public lands for exploration and development.

TABLE 3.8-1
MINERAL RESOURCES IN THE VICINITY OF THE TYLERHORSE WIND PROJECT SITE

MRDS ID*	Site Name	Primary Commodity	Operation Type	Status
Tylerhorse Canyon Subarea (Includes Project Site)				
10035218	Cluff Ranch	Tungsten	Unknown	Occurrence
10035219	Esperanza	Tungsten	Unknown	Occurrence
10110711	Cactus Queen Mine	Gold, Silver	Unknown	Producer
10115314	Cactus Gold Mine	Gold	Surface-Underground	Plant
10115495	Calcite Placer No. 1 Deposit	Limestone	Placer	Unknown
10139321	Mojave Pit	Sand and Gravel	Surface	Past Producer
10139436	Cluff Ranch Prospects	Tungsten	Surface	Prospect
10187934	Buster Tom Prospect	Uranium	Surface	Prospect
10188411	Bean Canyon Area Deposit	Limestone	Unknown	Occurrence
10138869	Snowball Deposit	Limestone	Unknown	Occurrence
10138892	Winkler Deposit	Gold	Surface	Occurrence
10179356	Contact Group	Arsenic	Underground	Past Producer
10188388	Mojave Portland Cement Co	Stone, Crushed	Surface	Past Producer
10211848	Silver Prince Deposit	Gold	Surface	Prospect
10212140	Willow Springs Pit	Sand and Gravel	Surface	Past Producer
10212319	Calcite Quarry	Limestone	Surface	Past Producer
10212329	Unnamed Quarry	Limestone	Surface	Past Producer
10232023	Desert Rock Milling Co. Quarry	Stone, Crushed	Surface	Past Producer
10236036	Unnamed Quarries	Limestone	Surface	Past Producer
10236526	California Portland Cement Co.	Limestone	Surface	Past Producer
10260978	Leona Tungsten Mine	Tungsten	Underground	Producer
10284799	Marie Celesle	Gold	Placer	Past Producer
10285255	Esperanza Prospect	Tungsten	Surface	Prospect
10285324	Monolith Portland Cement Co.	Limestone	Surface	Producer
10285349	Maharg and Houghawott Mine	Antimony	Underground	Past Producer
10285455	Tylerhorse Canyon Deposit	Limestone	Surface-Underground	Past Producer
10299952	Cluff Ranch Deposit	Marble	Surface	Past Producer
10310650	Middle Buttes (Cactus) Deposit	Gold, Silver	Surface-Underground	Past Producer

NOTES: MRDS = Mineral Resource Data System

SOURCE: MRDS, 2011.

State

State Surface Mining and Reclamation Act (SMARA) of 1975.

The Surface Mining and Reclamation Act of 1975 (SMARA) mandated the initiation by the State Geologist of mineral land classification in order to help identify and protect mineral resources in areas within the State subject to urban expansion or other irreversible land uses which would preclude mineral extraction. SMARA also allowed 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), using the California Mineral Land Classification System (DOC, 2000).

The objective of the classification and designation process is to ensure, through appropriate lead agency policies and procedures, that mineral deposits of statewide or of regional significance are available when needed. The SMGB, prioritizes areas to be classified and/or designated based on recommendations from the State Geologist and public input. Areas which are generally given highest priority are those areas within the State which are subject to urban expansion or other irreversible land uses which would preclude mineral extraction (DOC, 2000).

Local

Kern County General Plan

The Conservation and Open Space Element of the KCGP contains a goal to preserve mineral resources in the County:

Goals: Resource.

1) To contain new development within an area large enough to meet generous projections of foreseeable need, but in locations which will not impair the economic strength derived from the petroleum, agriculture, rangeland, or mineral resources, or diminish the other amenities which exist in the County.

3.9 Noise

The discussion in this section explains how sound is characterized, describes the existing noise environment on and near the TWP site, provides information about how vibration is characterized, and summarizes relevant regulations and standards related to noise and vibration. Baseline noise conditions and information contained within this section is based on the data presented in the *Noise Technical Report Tylerhorse Wind Energy Project,* August 2012, prepared by CH2MHill. A full copy of the report is included in Appendix E of this DEIS/PA.

3.9.1 Environmental Setting

Environmental Noise Fundamentals

Noise is defined as unwanted sound. Sound, traveling in the form of waves from a source, exerts a sound pressure level (referred to as sound level) which is measured in decibels (dB), with zero dB corresponding roughly to the threshold of human hearing, and 120 to 140 dB corresponding to the threshold of pain. Pressure waves traveling through air exert a force registered by the human ear as sound.

Sound pressure fluctuations can be measured in units of hertz (Hz), which correspond to the frequency of a particular sound. Typically, sound does not consist of a single frequency, but rather a broad band of frequencies varying in levels of magnitude (sound power). When all the audible frequencies of a sound are measured, a sound spectrum ranging in frequency from 20 to 20,000 Hz is plotted. The sound pressure level, therefore, constitutes the additive force exerted by a sound corresponding to the sound frequency/sound power level spectrum.

The typical human ear is not equally sensitive to all frequencies of the audible sound spectrum. As a consequence, when assessing potential noise impacts, sound is measured using an electronic filter that de-emphasizes the frequencies below 1,000 Hz and above 5,000 Hz in a manner corresponding to the human ear's decreased sensitivity to extremely low and extremely high frequencies. This method of frequency weighting is referred to as A-weighting and is expressed in units of A-weighted decibels (dBA). Frequency A-weighting follows an international standard methodology of frequency de-emphasis and is typically applied to community noise measurements. Some representative noise sources and their corresponding A-weighted noise levels are shown in Figure 3.9-1.

Noise Exposure and Community Noise

An individual's noise exposure is a measure of noise over a period of time. A noise level is a measure of noise at a given instant in time. The noise levels presented in Figure 3.9-1 are representative of measured noise at a given instant in time, however, they rarely persist consistently over a long period of time. Rather, community noise varies continuously over a period of time with respect to the contributing sound sources of the community noise environment. Community noise is primarily the product of many distant noise sources, which constitute a relatively stable background noise exposure, with the individual contributors unidentifiable. The background

noise level changes throughout a typical day, but does so gradually, corresponding with the addition and subtraction of distant noise sources such as traffic and atmospheric conditions. What makes community noise constantly variable throughout a day, besides the slowly changing background noise, is the addition of short duration single event noise sources (e.g., aircraft flyovers, motor vehicles, sirens), which are readily identifiable to the individual.

These successive additions of sound to the community noise environment cause the community noise level to vary from instant to instant, which requires the measurement of noise exposure over a period of time to legitimately characterize a community noise environment and evaluate cumulative noise impacts. This time-varying characteristic of environmental noise is described using statistical noise descriptors. The most frequently used noise descriptors are summarized below:

Leq — the equivalent sound level is used to describe noise over a specified period of time, typically one hour, in terms of a single numerical value. The Leq is the constant sound level which would contain the same acoustic energy as the varying sound level, during the same time period (i.e., the average noise exposure level for the given time period).

Lmax — the instantaneous maximum noise level for a specified period of time.

L50 — the noise level that is equaled or exceeded 50 percent of the specified time period. The L50 represents the median sound level.

L90 — the noise level that is equaled or exceeded 90 percent of the specified time period. The L90 is sometimes used to represent the background sound level.

Ldn — 24-hour day and night A-weighted noise exposure level which accounts for the greater sensitivity of most people to nighttime noise by weighting noise levels at night ("penalizing" nighttime noises). Noise between 10:00 PM and 7:00 AM is weighted (penalized) by adding 10 dBA to take into account the greater annoyance of nighttime noises.

CNEL — similar to the Ldn, the Community Noise Equivalent Level (CNEL) adds a 5-dBA penalty to the evening hours between 7:00 PM and 10:00 PM in addition to a 10-dBA penalty between the hours of 10:00 PM and 7:00 AM.

As a general rule, in areas where the noise environment is dominated by traffic, the Leq during the peak-hour is generally equivalent to the Ldn at that location (within +/- 2 dBA) (Caltrans, 1998).

Effects of Noise on People

The effects of noise on people can be placed into three categories:

- subjective effects of annoyance, nuisance, dissatisfaction;
- interference with activities such as speech, sleep, learning; and

- physiological effects such as hearing loss or sudden startling.

Environmental noise typically produces effects in the first two categories, nuisance and interference with activities. Workers in industrial plants can experience noise in the last category, physiological effects. There is no completely satisfactory way to measure the subjective effects of noise, or the corresponding reactions of annoyance and dissatisfaction. A wide variation in individual thresholds of annoyance exists, and different tolerances to noise tend to develop based on an individual's past experiences with noise.

Thus, an important way of predicting a human reaction to a new noise environment is the way it compares to the existing environment to which one has adapted: the so called "ambient noise" level. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged by those hearing it. With regard to increases in A-weighted noise level, the following relationships occur:

- except in carefully controlled laboratory experiments, a change of 1 dBA cannot be perceived;
- outside of the laboratory, a 3 dBA change is considered a just-perceivable difference;
- a change in level of at least 5 dBA is required before any noticeable change in human response would be expected; and
- a 10 dBA change is subjectively heard as approximately a doubling in loudness, and can cause adverse response.

These relationships occur in part because of the logarithmic nature of sound and the decibel system. The human ear perceives sound in a non-linear fashion, hence the decibel scale was developed. Because the decibel scale is based on logarithms, two noise sources do not combine in a simple additive fashion, rather logarithmically. For example, if two identical noise sources produce noise levels of 50 dBA the combined sound level would be 53 dBA, not 100 dBA.

Noise Attenuation

Stationary point sources of noise, including stationary mobile sources such as idling vehicles, attenuate (lessen) at a rate between 6 dBA for hard sites and 7.5 dBA for soft sites for each doubling of distance from the reference measurement. Hard sites are those with a reflective surface between the source and the receiver such as parking lots or smooth bodies of water. No excess ground attenuation is assumed for hard sites and the changes in noise levels with distance (drop-off rate) is simply the geometric spreading of the noise from the source. Soft sites have an absorptive ground surface such as soft dirt, grass or scattered bushes and trees. In addition to geometric spreading, an excess ground attenuation value of 1.5 dBA (per doubling distance) is normally assumed for soft sites. Line sources (such as traffic noise from vehicles) attenuate at a rate between 3 dBA for hard sites and 4.5 dBA for soft sites for each doubling of distance from the reference measurement (Caltrans, 1998).

Vibration

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings. The root mean square (RMS) amplitude is most frequently used to describe the effect of vibration on the human body. The RMS amplitude is the average of the squared amplitude of the signal. Typically, ground-borne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration (Federal Transit Administration, 2006).

3.9.1.2 Physical Setting

Current noise levels within most of the Project area are expected to be typical of undeveloped land with scattered rural residences. The Project is located mostly on undeveloped land bordering several wind energy facilities that are under construction. The Project is located immediately adjacent to the Manzana Wind Energy Project (MWEP) on adjacent private lands; and the approved Pacific Wind Energy Project (PWEP). No other significant noise sources have been identified other than a few lightly traveled roads that run through the Project area and the existing MWEP (CH2MHill, 2012).

According to results of studies presented by the BLM in the document *Final Programmatic Environmental Impact Statement on Wind Energy Development on BLM-Administered Lands in the Western United States*, in a typical rural environment the "background noise is expected to be approximately 40 dBA during the day and 30 dBA at night" (BLM, 2005). Furthermore, according to information on noise levels presented by EPA, background noise levels are generally near 35 dBA Ldn in wilderness areas, near 40 dBA Ldn in rural residential areas, and near 44 to 45 dBA Ldn in agricultural cropland (EPA, 1978).

Based on the referenced information, existing background noise levels in the vicinity of the Project are reasonably expected to be approximately 40 dBA or less. In addition, it should be noted that wind-induced noise and operations of existing turbines may result in these levels being exceeded periodically.

Sensitive Receptors

Some land uses are considered more sensitive to ambient noise levels than others because of the amount of noise exposure (in terms of both exposure duration and insulation from noise) and the types of activities typically involved. Residences, hotels, schools, rest homes, and hospitals are generally more sensitive to noise than commercial and industrial land uses. There are several scattered rural residences and other structures within the Project vicinity. As identified in Appendix E, Noise Technical Study, the maximum turbine layout indicates turbines may be within approximately 1,200 feet of potentially habitable residential structures. The impacts of the turbine location's proximity to sensitive receptors are evaluated in Section 4.9, *Noise* of this DEIS/PA.

3.9.2 Applicable Regulations, Plans, and Standards

Federal

Bureau of Land Management

The BLM is the federal agency charged with managing federal public lands and is responsible for the development of wind energy resources on BLM-administered lands. The BLM prepared the *Final Programmatic Environmental Impact Statement on Wind Energy Development on BLM-Administered Lands in the Western United States* (BLM, 2005) in accordance with the requirements of the NEPA to establish a "Wind Energy Development Program." Several key findings/statements relevant to assessing noise impacts of a wind project are cited below (CH2MHill, 2012):

- At many wind energy project sites on BLM-administered lands, large fluctuations in broadband noise are common, and even a 10-dB increase would be unlikely to cause an adverse community response.

- For a typical rural environment, background noise is expected to be approximately 40 dBA during the day and 30 dBA at night.

- The U.S. Environmental Protection Agency (EPA) guideline recommends a day-night sound level (Ldn) of 55 dB(A) to protect the public from the effect of broadband environmental noise in typically quiet outdoor and residential areas (EPA, 1974). This level is not a regulatory goal but is "intentionally conservative to protect the most sensitive portion of the American population" with "an additional margin of safety."

- Geometric spreading only, results in a sound pressure level of 58 to 62 dB(A) at a distance of 50 meters (164 feet) from the turbine, which is about the same level as conversational speech at a 1-meter (3-foot) distance.

- To estimate combined noise levels from multiple turbines, the sound pressure level from each turbine should be estimated and summed.

- Noise generated by turbines, substations, transmission lines, and maintenance activities during the operational phase would approach typical background levels for rural areas at distances of 2,000 feet (600 meters) or less and, therefore, would not be expected to result in cumulative impacts to local residents.

The above provides guidance on how the BLM assesses the potential noise impacts from individual projects.

State

California Code of Regulations has guidelines for evaluating the compatibility of various land uses as a function of community noise exposure, as shown in Figure 3.9-2. The State of California also establishes noise limits for vehicles licensed to operate on public roads. For heavy trucks, the State pass-by standard is consistent with the federal limit of 80 dB.

The State pass-by standard for light trucks and passenger cars (less than 4.5 tons, gross vehicle rating) is also 80 dBA at 15 meters from the centerline. These standards are implemented through controls on vehicle manufacturers and by legal sanction of vehicle operators by state and local law enforcement officials.

The State has also established noise insulation standards for new multi-family residential units, hotels, and motels that would be subject to relatively high levels of transportation-related noise. These requirements are collectively known as the California Noise Insulation Standards (Title 24, California Code of Regulations). The noise insulation standards set forth an interior standard of DNL 45 dBA in any habitable room. They require an acoustical analysis demonstrating how dwelling units have been designed to meet this interior standard where such units are proposed in areas subject to noise levels greater than DNL 60 dBA. Title 24 standards are typically enforced by local jurisdictions through the building permit application process.

Local

Within the State of California, noise from wind turbine generator operations is typically regulated at the county level. For Kern County, the applicable documents are the Noise Element of the Kern County General Plan and Section 19.64.140.J of the Kern County Zoning Ordinance, which is found in Chapter 19.64, Wind Energy (WE) Combining District.

Kern County General Plan

The Kern County General Plan Noise Element was updated in June 2004. The Noise Element identifies goals, policies, and implementation measures that guide development with regard to noise. The Kern County General Plan Noise Element identifies both residential and park/recreational areas as *noise sensitive*. In *noise sensitive* areas, noise levels generated by new projects are to be mitigated to 65 dB Ldn or less in outdoor activity areas and 45 dB Ldn or less within interior living spaces, as specified in the Kern County Zoning Ordinance Section 19.64.140.J (zoning ordinance is discussed below). The following General Plan goals and policies are applicable to the proposed Project:

Chapter 3. Noise Element

Section 3.2. Noise Sensitive Areas

Goals

Goal 1. Ensure that residents of Kern County are protected from excessive noise and that moderate levels of noise are maintained.

Policies

Policy 1. Review discretionary industrial, commercial, or other noise-generating land use projects for compatibility with nearby noise-sensitive land uses.

Policy 2. Require noise level criteria applied to all categories of land uses to be consistent with the recommendations of the California Division of Occupational Safety and Health (DOSH)

Policy 3. Encourage vegetation and landscaping along roadways and adjacent to other noise sources in order to increase absorption of noise.

Policy 4. Utilize good land use planning principles to reduce conflicts related to noise emissions.

Policy 5. Prohibit new noise-sensitive land uses in noise-impacted areas unless effective mitigation measures are incorporated into the project design. Such mitigation shall be designed to reduce noise to the following levels:

a. 65 dB-Ldn or less in outdoor activity areas.

b. 45 dB-Ldn or less within living spaces or other noise sensitive interior spaces.

Policy 7. Employ the best available methods of noise control.

Policy 8. Enforce State Noise Insulation Standards (California Administrative Code, Title 24) and Chapter 35 of the Uniform Building Code concerning construction of new multiple-occupancy dwellings such as hotels, apartments, and condominiums.

Kern County has not adopted vibration thresholds.

Kern County Zoning Ordinance (Title 19), Revised March 2009: Chapter 19.64. Wind Energy (WE) Combining District

The WE Combining District (Chapter 19.64) contains development standards and conditions (Section 19.64.140) that would be applicable to the siting and operation of wind turbines. The following provisions apply to noise issues related to the Project.

Section 19.64.140 (Development Standards and Conditions) – Subsection J

Where a residence, school, church, public library, or other sensitive or highly sensitive land use, as identified in the Noise Element of the County General Plan, is located within one (1) mile in a prevailing downwind direction or within one-half (½) mile in any other direction of a project's exterior boundary, an acoustical analysis shall be prepared by a qualified acoustical consultant prior to the issuance of any building permit. The consultant and the resulting report shall be subject to review and approval by the Kern County Health Department. The report shall address

any potential impacts on sensitive or highly sensitive land uses. In addition, the acoustical report shall demonstrate that the proposed development shall comply with the following criteria:

1. Audible noise due to wind turbine operations shall not be created which causes the exterior noise level to exceed forty-five (45) dBA for more than five (5) minutes out of any one- (1-) hour time period using the L_8 metric or to exceed fifty (50) dBA for any period of time when measured within 50 feet of any existing residence, school, hospital, church, or public library.

2. Low frequency noise or infrasound from wind turbine operations shall not be created which causes the exterior noise level to exceed the following limits when measured within 50 feet of any existing residence, school, hospital, church, or public library.

One-Third Octave Band Center Frequency (Hz)	Sound Pressure Level (dB)
2 to 1	70 (each band)
20	68
25	67
31.5	65
40	62
50	60
63	57
80	55
100	52
125	50

3. In the event audible noise due to wind turbine operations contains a steady pure tone, such as a whine, screech, or hum, the standards for audible noise set forth in Subparagraph (1) of this subsection shall be reduced by five (5) dBA. A pure tone is defined to exist if the one-third (1/3) octave band sound pressure level in the band, including the tone, exceeds the arithmetic average of the sound pressure levels of the two (2) contiguous one-third (1/3) octave bands by five (5) dBA for center frequencies of five hundred (500) Hz and above, by eight (8) dBA for center frequencies between one hundred and sixty (160) Hz and four hundred (400) Hz, or by fifteen (15) dBA for center frequencies less than or equal to one hundred and twenty-five (125) Hz.

4. In the event the audible noise due to wind turbine operations contains repetitive impulsive sounds, the standards for audible noise set forth in Subparagraph (1) of this subsection shall be reduced by five (5) dBA.

5. In the event the audible noise due to wind turbine operations contains both a pure tone and repetitive impulsive sounds, the standards for audible noise set forth in Subparagraph (1) of this subsection shall be reduced by a total of five (5) dBA.

6. In the event the ambient noise level (exclusive of the development in question) exceeds one (1) of the standards given above, the applicable standard shall be adjusted so as to equal the ambient noise level. For audible noise, the ambient noise level shall be expressed in terms of the highest whole number sound pressure level in dBA which is exceeded for no more than five (5) minutes per hour.

   For low frequency noise or infrasound, the ambient noise level shall be expressed in terms of the equivalent level (L_{eq}) for the one-third (1/3) octave band in question, rounded to the

nearest whole decibel. Ambient noise levels shall be measured within fifty (50) feet of potentially affected existing residences, schools, hospitals, churches, or public libraries. Ambient noise level measurement techniques shall employ all practical means of reducing the effects of wind-generated noise at the microphone. Ambient noise level measurements may be performed when wind velocities at the proposed project site are sufficient to allow wind turbine operation, provided that the wind velocity does not exceed thirty (30) mph at the ambient noise measurement location.

7. Any noise level falling between two (2) whole decibels shall be the lower of the two (2).

8. In the event that noise levels, resulting from a proposed development, exceed the criteria listed above, a waiver to said levels may be granted by the Planning Director provided that the following has been accomplished:

   - Written consent from the affected property owners has been obtained stating that they are aware of the proposed development and the noise limitations imposed by this code, and that consent is granted to allow noise levels to exceed the maximum limits allowed.

   - A permanent noise impact easement has been recorded in the County Hall of Records which describes the benefited and burdened properties and which advises all subsequent owners of the burdened property that noise levels in excess of those permitted by this code may exist on or at the burdened property.

3.10 Paleontological Resources

This section describes the existing paleontological resources at that may be affected by the proposed TWP and discusses the applicable regulations, plans and standards that form the basis of the paleontological resources environmental consequences analysis presented in Section 4.10, Paleontological Resources of this DEIS/PA. Paleontological resources, or fossils, are the remains of extinct organisms, and provide the only direct evidence of ancient life. They are considered to be non-renewable resources because they cannot be replaced once they are destroyed. For the purpose of this analysis, and in accordance with existing BLM policy, scientifically significant paleontological resources are defined as vertebrate fossils that are identifiable to taxon and/or element, noteworthy occurrences of invertebrate and plant fossils, and vertebrate trackways.

3.10.1 Environmental Setting

Geologic Setting

The TWP site is located on a moderately sloped alluvial fan consisting of younger and older Quaternary age alluvial fan deposits (Kleinfelder, 2011). These deposits consist of loose sedimentary material that was shed from the Tehachapi Mountains over the course of the Quaternary period (up to 1.8 million years ago). The age of the deposits is determined based on how recently the land surface has undergone active sediment build up through periodic flooding and sediment deposition. According to geologic mapping, portions of the three parcels lie in either the older Pleistocene-age alluvial fan materials (*Qoa*), or the younger Holocene and Late Pleistocene-age alluvial soils (*Qa*) (Kleinfelder, 2011). The older soils are characterized as alluvial gravel or sand, and the younger soils comprise silt, sand, and gravel with occasional cobbles and boulders (Kleinfelder, 2011). Although it is unknown at what depth the younger Holocene and Late Pleistocene soils are underlain by older sedimentary deposits, given their proximity to the older Pleistocene-age alluvial fan materials, younger soils may be underlain by older soils at a potentially shallow depth (Kleinfelder, 2011).

Paleontological Resources Classifications

The BLM uses the Potential Fossil Yield Classification (PFYC) system to assess the potential for discovery of significant paleontological resources or the impact of surface disturbing activities to such resources by using a five class ranking system ranging. These five classes are grouped according to three conditions (BLM, 2007):

1. **Condition 1:** Areas known to contain vertebrate fossils (Class 4 – High Potential, or Class 5 – Very High Potential, depending on geologic unit);

2. **Condition 2:** Areas with exposure of geological units or settings that have high potential to contain vertebrate fossils (Class 3 – Moderate Potential, Class 4 – High Potential, or Class 5 – Very High Potential, based on geologic unit);

3. **Condition 3:** Areas that are very unlikely to produce vertebrate fossils (Class 1 – Very Low Potential, or Class 2 – Low Potential).

Paleontological Resources Inventory

Sapphos assessed the potential presence of recorded paleontological resources within and adjacent to the TWP site. As part of that assessment, a records search was conducted at the Natural History Museum of Los Angeles County and the Buena Vista Museum of Paleontology; and a fossil locality search was conducted through the University of California Museum of Paleontology Web site database (Sapphos, 2011).[1]

A search of the three museum collections yielded no records of paleontological resources within the TWP site. The nearest fossil locality identified by the records search was LACM 3722, a specimen of fossil horse (Equus), located north of the proposed property in the City of Tehachapi within older Quaternary deposits (Sapphos, 2011).

Paleontological Potential of the Underlying Geology

Based on the geologic setting and the museum records search, Sapphos (2011) determined the paleontological resource potential of the underlying geologic units throughout the TWP site. Although the PFYC system was not used specifically in that analysis, the information provided was sufficient enough to assign a corresponding PFYC class to a paleontological resource potential ranking. The location and type of geologic units with low to very low and moderate to high paleontological resource potential are described in Table 3.10 -1 (Sapphos, 2011).

TABLE 3.10 -1
CORRELATION AND AGES OF STRATIGRAPHIC UNITS IN THE PROJECT VICINITY

Age	Unit/Description	Map Unit Symbol	Project Area[b]	Paleontological Resource Potential and PFYC Class
Holocene and Late Pleistocene	Alluvial-fan and alluvial-valley deposits	Qa[a]	Section 24 – southeastern portion of property; Section 26 – far eastern portion of property.	Low to High (Condition 3, Class Class 2 – Condition 2, Class 4)
Pleistocene	Alluvial gravel and sand	Qoa	Section 24 – northern and western portions of property; Section 26 – central and western portions of property; Section 28 – entire property.	Moderate to High (Condition 2, Class 3 or Class 4)

NOTES:
[a] Paleontological resource potential increases with depth.
[B] The TWP is located in Sections 24, 26, and 28 in Township 10 North, Range 15 West San Bernardino Meridian.

SOURCE: Kleinfelder, 2011.

[1] The University of California Museum of Paleontology website database was searched for vertebrates, invertebrates, plants, and microfossils.

A paleontological records search and fossil locality database search found no records of existing fossil localities within the Project site. However, based on the geologic setting and museum records search, Sapphos (2011) determined the paleontological resources potential (which was further assigned a PFYC class for this analysis based on their assessment) to be moderate to high (or PFYC Class 3 or 4) within the Pleistocene-age sedimentary deposits (*Qoa*). This geologic unit underlies the following areas:

1. the northern and western portion of the TWP site located on Section 24;
2. the central and western portion of the TWP located on Section 26; and
3. the entire TWP site on Section 28.

The Paleontological Resources Inventory also determined the paleontological resource potential to be low to high (or PFYC Class 2 – Class 4) within the Holocene and Late Pleistocene age sedimentary deposits (*Qa*). This geologic unit underlies the following areas:

1. the southeastern portion of the TWP located on Section 24; and
2. the far eastern portion of the proposed site located on Section 26.

Within the Pleistocene-age deposits, even shallow excavations have the potential to disturb yet unknown/undiscovered, but potentially significant fossil resources. Within the Holocene and Late Pleistocene-age deposits, shallow excavations within these area have a low potential to disturb paleontological resources, but deeper excavations could uncover yet unknown/undiscovered, but potentially significant fossil resources, because they are frequently underlain by older sedimentary deposits.

3.10.2 Applicable Regulations, Plans and Standards

Federal

The management and preservation of paleontological resources on public lands are governed under various laws, regulations, and standards. For the past several decades, the BLM has used the FLMPA as the legislative foundation for its paleontological resource management policies. The BLM has also developed general procedural guidelines (Manual H-8720-1; Instructional Memorandum [IM] 2008-009; IM 2009-011) for the management of paleontological resources (BLM, 2007). Paleontological resource management objectives include the evaluation, management, protection, and location of fossils on BLM-managed lands. Management policy also includes measures to ensure that proposed land-use projects do not inadvertently damage or destroy scientifically significant paleontological resources.

National Environmental Policy Act

NEPA recognizes the continuing responsibility of the Federal Government to “preserve important historic, cultural, and natural aspects of our national heritage . . .” (Sec. 101 [42 USC § 4321]).

Federal Land Management and Policy Act

FLMPA defines significant fossils as: unique, rare or particularly well-preserved; an unusual assemblage of common fossils; being of high scientific interest; or providing important new data concerning [1] evolutionary trends, [2] development of biological communities, [3] interaction between or among organisms, [4] unusual or spectacular circumstances in the history of life, [5] or anatomical structure.

Omnibus Public Lands Act-Paleontological Resources Preservation Act

The Paleontological Resources Preservation Act, Title VI of the Omnibus Public Lands Act (OPLA-PRP) directs the Secretaries of the Interior and Agriculture to manage and protect paleontological resources on federal land using "scientific principles and expertise." OPLA-PRP incorporates most of the recommendations of the report of the Secretary of the Interior entitled Assessment of Fossil Management on Federal and Indian Lands (USDI, 2000) in order to formulate a consistent paleontological resources management framework. In passing the OPLA-PRP, Congress officially recognized the scientific importance of paleontological resources on some federal lands by declaring that fossils from these lands are federal property that must be preserved and protected. The OPLA-PRP codifies existing policies of the BLM, NPS, USFS, Bureau of Reclamation, and USFWS, and provides the following:

1. Uniform criminal and civil penalties for illegal sale and transport, and theft and vandalism of fossils from federal lands;

2. Uniform minimum requirements for paleontological resource-use permit issuance (terms, conditions, and qualifications of applicants);

3. Uniform definitions for "paleontological resources" and "casual collecting"; and

4. Uniform requirements for curation of federal fossils in approved repositories.

Federal legislative protections for scientifically significant fossils apply to projects that take place on federal lands (with certain exceptions such as DOD), involve federal funding, require a federal permit, or involve crossing state lines. Because the Project site occurs on BLM-managed lands, federal protections for paleontological resources apply under NEPA, FLPMA, and OPLA-PRP.

BLM West Mojave Plan

The TWP falls within the area covered by the BLM West Mojave Plan (WEMO), whose conservation program applies to both public and private lands (BLM, 2005). The TWP would pursue compliance with the goals and implementation policies set forth in the WEMO Plan. The Plan is an amendment to the CDCA Plan, which recognizes the importance of paleontological, prehistoric, and historic resources and places of cultural and religious value to Native Americans. In addition to its responsibilities under applicable federal laws and regulations, the WEMO Plan identifies six specific planning and management goals related to cultural resources:

1. Conduct an inventory of cultural resources to the fullest extent possible to expand knowledge of these resources;
2. Protect and preserve to the greatest extent possible representative samples of these resources;
3. Give full consideration to these resources during land use planning and management decisions;
4. Manage to maintain and enhance resource values;
5. Ensure that the BLM's activities avoid inadvertent damage to paleontological resources;
6. Achieve proper data recovery where adverse impacts cannot be avoided.

The CDCA Plan also states that Native American values will be considered in all CDCA land use and management decisions (BLM, 2005).

State

There are no statewide regulations, plans or standards that are applicable to this analysis.

Local

Kern County General Plan

The Land Use Element of the Kern County General Plan identifies a policy intended to minimize impacts to paleontological resources (Kern County, 2009):

> *Policy 25*. The County will promote the preservation of cultural and historic resources which provide ties with the past and constitute a heritage value to residents and visitors.
>
> *Implementation Measure M*. In areas of known paleontological resources, the County should address the preservation of these resources where feasible.

3.11 Public Health and Safety

The affected environment for Public Health and Safety includes evaluation of several program areas, including hazardous materials/hazardous waste management, unexploded ordnance (UXO), abandoned mined lands (AML), undocumented immigrants, transmission line safety and nuisance, traffic and transportation (including aviation) safety, worker safety and fire protection, public and private air strips/airfields, and geologic hazards.

3.11.1 Environmental Setting

Hazardous Materials

Several factors associated with the area in which a project is to be located affect the potential for an accidental release of a hazardous material that could cause public health impacts. These include:

- Local meteorology;
- Terrain characteristics;
- Location of population centers and sensitive receptors relative to the project;
- Existing public health concerns; and
- Existing environmental site contamination.

Meteorological Conditions

Meteorological conditions, including wind speed, wind direction, and air temperature, affect both the extent to which accidentally released hazardous materials would be dispersed into the air and the direction in which they would be transported. This affects the potential magnitude and extent of public exposure to such materials, as well as exposure to associated health risks. When wind speeds are low and the atmosphere stable, dispersion is reduced but could lead to increased localized public exposure. Recorded wind speeds and ambient air temperatures are described in Section 3. 02, Air Quality.

Terrain Characteristics

The location of elevated terrain is often an important factor in assessing potential exposure. An emission plume resulting from an accidental release could impact high elevations before impacting lower elevations. The topography of the site is generally flat with elevation ranging between 3,450 and 4,000 feet above sea level.

Location of Exposed Populations and Sensitive Receptors

The general population includes many sensitive subgroups that could be at greater risk from exposure to emitted pollutants. These sensitive subgroups include the very young, the elderly, and those with existing illnesses. In addition, the location of the population in the area surrounding a project site may have a major bearing on health risk.

The nearest sensitive receptor in the vicinity of the Proposed Action, is located approximately 1,365 feet from the nearest construction site.

Existing Public Health Concerns

Analyses of existing public health issues typically are prepared in order to identify the current status of respiratory diseases (including asthma), cancer, and childhood mortality rates in the population located near proposed action sites to provide a basis on which to evaluate any additional health impacts from the proposed action. Current uses of the TWP site include off-road recreational vehicle activities, hunting, hiking, camping, and livestock grazing. Current public health concerns of residents of rural Kern County include vector-borne diseases (e.g., West Nile virus (WNV), St. Louis Encephalitis (SLE), shadow flicker, Western Equine Encephalomyelitis (WEE), Valley Fever, and Hanta virus.

Vector-borne diseases include infectious diseases transmitted to humans by vectors such as mosquitoes, ticks, fleas, lice, or rodents. The purpose of vector control is to decrease contact between humans and vectors through education, surveillance, and integrated pest management strategies.

Mosquito-Borne Diseases

Mosquitoes are known to be the carriers of many serious diseases. As of August 23, 2011, Kern County has reported 130 cases of WNV (CDC, 2011a). According to the Centers for Disease Control and Prevention (CDC), the SLE virus is transmitted to humans by the bite of an infected mosquito. Most cases of SLE have occurred in eastern and central states. However, samples of mosquitoes have been submitted to the CDC from Kern County to test for the SLE virus (CDC, 2011b). WEE is a mosquito-borne zoonotic infection, primarily involving wild birds and the mosquito *Culex tarsalis*, that can produce acute central nervous system disease in infected horses and humans. WEE is regarded as one of the most serious mosquito-borne diseases in the U.S. due to its high mortality rate. Samples of mosquitoes have been submitted to the CDC from within Kern County to test for the WEE virus (CDC, 2011c).

Valley Fever

Coccidioidomycosis, commonly known as Valley Fever, is primarily a disease of the lungs that is common in the southwestern U.S. and northwestern Mexico. Valley Fever is caused by the fungus *Coccidioides immitis*, which grows in soils in areas of low rainfall, high summer temperatures, and moderate winter temperatures. These fungal spores become airborne when the soil is disturbed by winds, construction, farming, and other activities. In susceptible people and animals, infection occurs when a spore is inhaled. Valley Fever symptoms generally occur within three weeks of exposure. Valley Fever is not a contagious disease. Secondary infections are rare.

People working in certain occupations such as construction, agriculture, and archaeology have an increased risk of exposure and disease because these jobs result in the disturbance of soils where fungal spores are found. Valley Fever infection is highest in California from June to November. In addition, many domestic and native animals are susceptible to the disease, including dogs,

horses, cattle, coyotes, rodents, bats, and snakes. Most Valley Fever cases are very mild. It is estimated that 60 percent or more of infected people either have no symptoms or experience flu-like symptoms and never seek medical attention.

It is estimated that more than 4 million people live in areas where Valley Fever fungus is prevalent in the soils. According to the California Department of Public Health (CDPH), Kern County has a high incidence rate of Valley Fever, with 15.1 to 183 cases per every 100,000 people (CDPH, 2009). Soils that possess the potential to contain valley fever spores are typically dry, alkaline, semi-arid or arid soils similar to those found in the TWP site.

Hanta Virus

Infection with hantavirus can progress to Hantavirus Pulmonary Syndrome (HPS), which can be fatal. People become infected through contact with hantavirus-infected rodents or their urine and droppings. The Sin Nombre hantavirus, first recognized in 1993, is one of several New World hantaviruses circulating in the US. Rodent control remains the primary strategy for preventing hantavirus infection. All cases of Hantavirus infection are reported to and researched by the Viral Special Pathogens Branch of the CDC.

Shadow Flicker

Shadow flicker is the alternating change in light and intensity that occur when rotating wind turbine blades cast moving shadows on the ground or on structures. Shadow flicker effects may have the potential to cause seizures in individuals prone to epilepsy. Flicker from wind turbines that interrupt or reflect sunlight at frequencies greater than 3 Hertz (equivalent to 180 rotations per minute) poses a potential risk of inducing photosensitive seizures (Harding et al., 2008).

Existing Environmental Site Contamination

According to the Department of Toxic Substances Control (DTSC) Hazardous Waste and Substances site “Cortese” list, no hazardous waste facilities subject to corrective action or sites with documented releases of hazardous materials are located on the TWP site or anywhere in the vicinity of the site (DTSC, 2011). In addition, there are no known past uses of the site that would indicate a potential for encountering any existing contamination. As stated above, current and historic uses at the TWP site have been limited to activities that are not associated with substantial quantities of hazardous materials that could result in contamination of subsurface soils or groundwater.

Waste Management

The Kern County Waste Management Department operates seven landfills, five transfer stations and four bin sites. Among the seven, the Tehachapi Landfill is the closest to the TWP site at approximately 10 miles north of the site. The next closest landfill is the Mojave-Rosamond Landfill (about 20 miles from the site).

Unexploded Ordnance (UXOO)

Current and past uses of the TWP site do not consist of any known military uses. The military arrived in the western Mojave Desert in 1928 for general aviation practices. In 1942, an Army Air Base near Muroc Lake, which later became Edwards Air Force Base (AFB). Edwards AFB is located approximately 20 miles east of the TWP site. Therefore, based on past uses of the TWP site and no evidence to show that military operations have previously occurred on the site, an analysis of potential unexploded ordnance has not been conducted for the TWP site.

Abandoned Mined Lands (AML)

In some areas of Kern County, there are abandoned mine shafts which, if not secured, contribute to the injury of or fatality to unsuspecting members of the public. According to a database maintained by the United States Geologic Survey, there are no abandoned mine shafts on the TWP site. The closest known abandoned mine site is the Tylerhorse Canyon Deposit, which is approximately three miles away from the TWP site.

Undocumented Immigrants

Based on site observations and review of field surveys conducted at the TWP site, there are no known incidents involving undocumented immigrants occupying at or near the TWP site.

Interference with Radio-Frequency Communication

Radio frequency interference is a potential indirect effect of electrical line operation and is produced by the physical interactions of electric fields. Such interference is due to the radio noise produced by the action of the electric fields on the surface of the energized conductor. This process is known as corona discharge, but is referred to as spark gap electric discharge when it occurs within gaps between the conductor and insulators or metal fittings. Because of the power loss from such corona discharges, it is in the interest of each line proponent to employ design, construction and maintenance plans that minimize them. The earth and enclosures surrounding underground cables hinder the electric field from radiating significantly beyond the power lines, and the magnetic field strength radiating from the power lines is also reduced to the surrounding area.

Frequency modulated (FM) signals are normally unaffected as are modern digital signals such as those involved in cellular telephone communication or modern airport and other types of radio communication. Since the level of the AM interference in any given case would depend on factors such as line voltage, distance from the line to the receiving device, orientation of the antenna, signal level, line configuration and weather conditions, maximum interference levels are not specified as design criteria for modern transmission lines.

Audible Noise

Modern wind turbines have the rotor blades oriented upwind and the resultant noise is typically broadband in nature. In general, there are two main types of noise sources generated by an

upwind turbine: mechanical noise and aerodynamic noise. For more discussion on audible noise see Section 3.09 Noise.

Fire Hazards

The Kern County Fire Department is responsible for emergency response at the TWP site, including fire suppression, hazardous materials mitigation, rescue, and fire prevention. The nearest fire station to the TWP site is Kern County Fire Station 15 located in Rosamond. Additionally, BLM Ridgecrest Office Fire and Aviation is responsible for servicing undeveloped BLM lands and would work in conjunction with the Kern County Fire Station to service the site. BLM Fire and Aviation currently has five personnel and two type-3 engines (500 gallons) assigned to the Ridgecrest Field Office. The BLM and NPS have collaborated in the development of the Fire Management Activity Plan (FMAP) 1996 for the California Desert. The FMAP brings together fire management goals for biological resources, wilderness, and other sources and establishes fire management standards and prevention and protection programs. The FMAP includes limitations on fire suppression methods in critical habitat and other tortoise habitat; the limitations are designed to limit habitat disturbance while keeping fires small.

Nuisance Shocks

Nuisance shocks are caused by current flow at levels generally incapable of causing significant physiological harm. They result mostly from direct contact with metal objects electrically charged by fields from the energized line. Such electric charges are induced in different ways by the line's electric and magnetic fields. The potential for nuisance shocks around the proposed line would be minimized through standard industry grounding practices specified in the National Electrical Safety Code (NESC) and the joint guidelines of the American National Standards Institute (ANSI) and the Institute of Electrical and Electronics Engineers (IEEE).

Electric and Magnetic Field Exposure

Electromagnetic Fields (EMFs) are associated with electromagnetic radiation, which is energy in the form of photons. Radiation energy spreads as it travels and has many natural and human-made sources. The electromagnetic spectrum, the scientific name given to radiation energy, includes light, radio waves, and x-rays, among other energy forms. Electric and magnetic fields are common throughout nature and are produced by all living organisms. Concern over EMF exposure, however, generally pertains to human-made sources of electromagnetism and the degree to which they may have adverse biological effects or interfere with other electromagnetic systems.

Commonly known human-made sources of EMF are electrical systems such as electronics, telecommunications, electric motors, and other electrically powered devices. Radiation from these sources is invisible, non-ionizing, and of low frequency. Generally, in most living environments, the level of such radiation plus background natural sources of EMF are low. When transmission lines are buried underground, the earth and enclosures act to reduce electric field radiation, and greatly reduce the magnetic field strength radiating from the power lines.

Possible health effects associated with exposure to EMFs have been the subject of scientific investigation since the 1970s. Concern about EMF originally focused on electric fields; however, much of the recent research has focused on magnetic fields. Although the health effects of EMF remain uncertain, field intensity, transients, harmonics, and changes in intensity over time are some of the EMF characteristics that may need to be assessed to ascertain eventual human exposure effects. These characteristics may vary from power lines to appliances to home wiring and so may create different types of exposures. The exposure most often considered is intensity or magnitude of the field. It is recognized that public concern and scientific uncertainty remain regarding the potential health effects of EMF exposure. However, agencies such as the California Public Utilities Commission (CPUC) have yet to adopt any specific numerical standard for EMFs. Currently, the State has not adopted any specific limits or regulation for EMF levels related to electric power facilities.

Public and Private Airstrips/Airfields

There are no commercial airports located within 10 miles of the TWP site. Mojave Airport is the closest airport to the TWP site, located approximately 24 miles to the northeast. Mojave Airport has three runways, is accessible for public use, and averaged 48 aircraft operations per day for the 12-month period ending March 7, 2013. In addition, a private airstrip, Rosamond Skypark, is located approximately 12 miles southeast of the TWP site.

A major military facility, Edwards AFB, is located 20 miles to the east. Edwards AFB is an installation of the United States Air Force and serves air force military aircraft. Edwards AFB covers nearly 308,000 acres, and contains two parallel runways oriented northeast/southwest, Runways 4/22 left and right. As Edwards AFB is a United States Air Force military airfield, the number of daily aircraft operations is not available to the general public.

The TWP site is located within a military review requirement zone, which requires a review of any structures more than 500 feet tall (Kleinfelder, 2011). However, TWP wind turbines and associated appurtenances would be less than 500 feet tall.

Geologic Hazards

Geologic hazards are normally associated with issues such as seismicity (ground shaking), slope instability, subsidence, and expansive soils. Seismic hazards related to ground shaking include ground rupture, slope instability, liquefaction, seismic compaction, tsunamis, and seiches. A discussion of the affected environment of the TWP site regarding geologic hazards, including earthquakes and seismic activity is included in Section 3.15, Soil Resources.

Intentionally Destructive Acts

High-profile international and domestic terrorist attacks during the last decade present a new and real threat to the safety and security of U.S. population, infrastructure, and resources. Intentional destructive acts, such as sabotage or terrorism, associated with this Proposed Action could cause impacts to human health and the environment. In contrast to industrial hazards, collisions, and

natural events, where people can estimate statistical probabilities of events based on historical data and information, it is not possible to accurately estimate the probability of an act of terrorism or sabotage. In general, the consequences of a sabotage or terrorist attack on a wind facility would be expected to be as difficult to predict as accidental and natural catastrophic events such as seismic hazards covered in Section 3.16 (Soils).

3.11.2 Applicable Regulations, Plans, and Standards

Federal

BLM California Desert Conservation Area (CDCA) Plan

The Proposed Action would be located within the boundaries of the BLM's CDCA. The CDCA, which covers 25 million acres of land, serves as the BLM's land use guide for management of these public lands (BLM, 2007). The BLM West Mojave Plan (WEMO) serves as a Habitat Conservation Plan and CDCA amendment (BLM, 2005). A review of both the CDCA Plan and the WEMOWEMO indicated that no specific requirements regarding public health and safety were identified (BLM, 2007 and 2005). For a discussion of Air Quality standards pertaining to the CDCA and West Mojave Plan, refer to Section 3.2, Air Quality.

Comprehensive Environmental Response and Liability Act (CERCLA). Superfund Amendments and Reauthorization Act (SARA) of 1986 (42 USC Section 9601 et seq.)

The SARA amends CERCLA and governs hazardous substances. The applicable part of SARA for the TWP is Title III, otherwise known as the Emergency Planning and Community Right-To-Know Act of 1986 (EPCRA). Title III requires states to establish a process for developing local chemical emergency preparedness programs and to receive and disseminate information on hazardous substances present at facilities in local communities. The law provides primarily for planning, reporting, and notification concerning hazardous substances. Key sections of the law are:

1. **Section 302** – Requires one time notification when extremely hazardous substances (EHSs) are present in excess of their threshold planning quantities (TPQs). EHSs and their TPQs are found in Appendices A and B to 40 Code of Federal Regulations (CFR) Part 355.

2. **Section 304** – Requires immediate notification to the local emergency planning committee (LEPC) and the state emergency response commission (SERC) when a hazardous material is released in excess of its reportable quantity (RQ). If a CERCLA-listed hazardous substance RQ is released, notification must also be given to the National Response Center in Washington, D.C. (RQs are listed in 40 CFR Part 302, Table 302.4). These notifications are in addition to notifications given to the local emergency response team or fire personnel.

3. **Section 311** – Requires that either material safety data sheets (MSDSs) for all hazardous materials or a list of all hazardous materials be submitted to the SERC, LEPC, and local fire department.

Clean Air Act (CAA) (42 USC 7401 et seq. as amended)

Regulations under the CAA are designed to prevent accidental releases of hazardous materials. The regulations require facilities that store a Threshold Quantity (TQ) or greater of listed regulated substances to develop a Risk Management Plan (RMP), including hazard assessments and response programs to prevent accidental releases of listed chemicals.

Clean Water Act (CWA) (40 CFR 112)

The Spill Prevention, Control, and Countermeasures (SPCC) program under the CWA is designed to prevent or contain the discharge or threat of discharge of oil into navigable waters or adjoining shorelines**.** Regulations under the CWA require facilities to prepare a written SPCC Plan if they store oil and its release would pose a threat to navigable waters.

Toxic Substances Control Act (15 USC 2605)/Resource Conservation and Recovery Act (RCRA) (42 U.S. Code [USC] 6901 et seq.)/Hazardous and Solid Waste Act (HSWA)

The Federal Toxic Substances Control Act (1976) and the RCRA of 1976 established a program administered by the U.S. Environmental Protection Agency (EPA) for the regulation of the generation, transportation, treatment, storage, and disposal of hazardous waste. The RCRA was amended in 1984 by the HSWA, which affirmed and extended the "cradle to grave" system of regulating hazardous wastes.

U.S. Department of Transportation (DOT) Hazardous Materials Transport Act (49 USC 5101)

The U.S. DOT, in conjunction with the EPA, is responsible for enforcement and implementation of federal laws and regulations pertaining to transportation of hazardous materials. The Hazardous Materials Transportation Act of 1974 directs the U.S. DOT to establish criteria and regulations regarding the safe storage and transportation of hazardous materials. Code of Federal Regulations (CFR) 49, 171–180, regulates the transportation of hazardous materials, types of material defined as hazardous, and the marking of vehicles transporting hazardous materials.

Occupational Safety and Health Administration (OSHA), Title 29 CFR 1910

The OSHA's mission is to ensure the safety and health of America's workers by setting and enforcing standards; providing training, outreach, and education; establishing partnerships; and encouraging continual improvement in workplace safety and health. The OSHA staff establishes and enforces protective standards and reaches out to employers and employees through technical assistance and consultation programs.

State

Health and Safety Code, Section 25500 et seq.

This code and the related regulations in 19 California Code of Regulations (CCR) 2620, et seq. , require local governments to regulate local business storage of hazardous materials in excess of certain quantities. The law also requires that entities storing hazardous materials be prepared to respond to releases. Those using and storing hazardous materials are required to submit a Hazardous Materials Business Plan (HMBP) to their local Certified Unified Program Agency (CUPA) and to report releases to their CUPA and the State Office of Emergency Services.

Health and Safety Code, Section 25531 et seq.

This code and the California Accidental Release Program (CalARP) regulate the registration and handling of regulated substances. Regulated substances are any chemicals designated as an extremely hazardous substance by the U.S. Environmental Protection Agency (USEPA) as part of its implementation of SARA. Health and Safety Code Section 25531 overlaps or duplicates some of the requirements of SARA and the CAA. Facilities handling or storing regulated substances at or above TPQs must register with their local CUPA and prepare a Risk Management Plan (RMP).

Health and Safety Code, Section 41700

This section states that "no person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause injury or damage to business or property."

CCR Title 8, Section 5189 Process Safety Management of Acutely Hazardous Materials

Requires facility owners to develop and implement effective safety management plans to ensure that large quantities of hazardous materials are handled safely. While these requirements primarily provide for the protection of workers, they also indirectly improve public safety and are coordinated with the RMP process.

Hazardous Materials Release Response Plans and Inventory Act of 1985

The Hazardous Materials Release Response Plans and Inventory Act, also known as the Business Plan Act, requires businesses using hazardous materials to prepare a plan that describes their facilities, inventories, emergency response plans, and training programs. Hazardous materials are defined as unsafe raw or unused materials that are part of a process or manufacturing step. They are not considered hazardous waste. Health concerns pertaining to the release of hazardous materials, however, are similar to those relating to hazardous waste.

Hazardous Waste Control Act (HWCA)

The HWCA created the State hazardous waste management program, which is similar to but more stringent than the federal RCRA program. The act is implemented by regulations contained in Title 26 of the CCR, which describes the following required aspects for the proper management of hazardous waste:

1. Identification and classification;
2. Generation and transportation;
3. Design and permitting of recycling, treatment, storage, and disposal facilities;
4. Treatment standards;
5. Operation of facilities and staff training; and
6. Closure of facilities and liability requirements.

These regulations list more than 800 materials that may be hazardous and establish criteria for identifying, packaging, and disposing of such waste. Under the HWCA and Title 26, the generator of hazardous waste must complete a manifest that accompanies the waste from generator to transporter to the ultimate disposal location. Copies of the manifest must be filed with the California Department of Toxic Substances and Control (DTSC).

Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (Unified Program)

This program requires the administrative consolidation of six hazardous materials and waste programs (Program Elements) under one agency, a CUPA. The Program Elements consolidated under the Unified Program are:

1. Hazardous Waste Generator and Onsite Hazardous Waste Treatment Programs (i.e., Tiered Permitting),
2. Aboveground Petroleum Storage Tank SPCC,
3. Hazardous Materials Release Response Plans and Inventory Program (a.k.a. Hazardous Materials Disclosure or “Community-Right-To-Know”),
4. Cal ARP,
5. Underground Storage Tank (UST) Program, and
6. Uniform Fire Code Plans and Inventory Requirements.

The Unified Program is intended to provide relief to businesses complying with the overlapping and sometimes conflicting requirements of formerly independently managed programs. The Unified Program is implemented at the local government level by CUPAs. Most CUPAs have been established as a function of a local environmental health or fire department. Some CUPAs have contractual agreements with another local agency, a participating agency, which implements one or more Program Elements in coordination with the CUPA.

Department of Toxic Substance Control (DTSC)

The DTSC is a department of Cal/EPA and is the primary agency in California that regulates hazardous waste, cleans-up existing contamination, and looks for ways to reduce the hazardous waste produced in California. The DTSC regulates hazardous waste in California primarily under the authority of the federal RCRA and the California Health and Safety Code (primarily Division 20, Chapters 6.5 through 10. , and Title 22, Division 4.5). Other laws that affect hazardous waste are specific to handling, storage, transportation, disposal, treatment, reduction, cleanup, and emergency planning.

Government Code §65962.5 (commonly referred to as the Cortese List) includes the DTSC listed hazardous waste facilities and sites, Department of Health Services (DHS) lists of contaminated drinking water wells, sites listed by the SWRCB as having underground storage tank leaks and which have had a discharge of hazardous wastes or materials into the water or groundwater, and lists from local regulatory agencies of sites that have had a known migration of hazardous waste/material.

California Office of Emergency Services (OES)

In order to protect the public health and safety and the environment, the California OES is responsible for establishing and managing Statewide standards for business and area plans relating to the handling and release or threatened release of hazardous materials. Basic information on hazardous materials handled, used, stored, or disposed of (including location, type, quantity, and the health risks) needs to be available to firefighters, public safety officers, and regulatory agencies needs to be included in business plans in order to prevent or mitigate the damage to the health and safety of persons and the environment from the release or threatened release of these materials into the workplace and environment. These regulations are covered under Chapter 6.95 of the California Health and Safety Code Article 1–Hazardous Materials Release Response and Inventory Program (Sections 25500 to 25520) and Article 2–Hazardous Materials Management (Sections 25531 to 25543.3).

CCR Title 19, Public Safety, Division 2, OES, Chapter 4–Hazardous Material Release Reporting, Inventory, And Response Plans, Article 4 (Minimum Standards for Business Plans) establishes minimum Statewide standards for Hazardous Materials Business Plans (HMBPs). These plans shall include the following: (1) a hazardous material inventory in accordance with Sections 2729.2 to 2729.7; (2) emergency response plans and procedures in accordance with Section 2731; and (3) training program information in accordance with Section 2732. Business plans contain basic information on the location, type, quantity, and health risks of hazardous materials stored, used, or disposed of in the State. Each business shall prepare a HMBP if that business uses, handles, or stores a hazardous material or an extremely hazardous material in quantities greater than or equal to the following: 500 pounds of a solid substance, 55 gallons of a liquid, or 200 cubic feet of compressed gas at any time.

California Occupational Safety and Health Administration (Cal/OSHA)

Cal/OSHA is the primary agency responsible for worker safety in the handling and use of chemicals in the workplace. Cal/OSHA standards are generally more stringent than federal regulations. The employer is required to monitor worker exposure to listed hazardous substances and notify workers of exposure (8 CCR Sections 337-340). The regulations specify requirements for employee training, availability of safety equipment, accident-prevention programs, and hazardous substance exposure warnings.

California Highway Patrol (CHP)

A valid Hazardous Materials Transportation License, issued by the CHP, is required by the laws and regulations of State of California Vehicle Code Section 3200.5 for transportation of either:

1. Hazardous materials shipments for which the display of placards is required by State regulations; or

2. Hazardous materials shipments of more than 500 pounds, which would require placards if shipping greater amounts in the same manner.

Additional requirements on the transportation of explosives, inhalation hazards, and radioactive materials are enforced by the CHP under the authority of the State Vehicle Code. Transportation of explosives generally requires consistency with additional rules and regulations for routing, safe stopping distances, and inspection stops (Title 14, CCR, Chapter 6, Article 1, Sections 1150-1152.10). Inhalation hazards face similar, more restrictive rules and regulations (Title 13, CCR, Chapter 6, Article 2.5, Sections 1157-1157.8). Radioactive materials are restricted to specific safe routes for transportation of such materials.

CCR Title 14, Section 1254

CCR 14 Section 1254 presents guidelines for minimum clearance requirements on non-exempt utility poles. The TWP structures would be primarily exempted from the clearance requirements with the exception of cable poles and dead-end structures.

As shown in Figure 4.8-1 of CCR 14 Section 1254, the firebreak clearances required by PRC 4292 are applicable within an imaginary cylindrical space surrounding each pole or tower on which a switch, fuse, transformer or lightning arrester is attached and surrounding each dead-end or corner pole, unless such pole or tower is exempt from minimum clearance requirements by provisions of 14, CCR, 1255 or PRC 4296. The radius of the cylindroid is 3.1 m (10 feet) measured horizontally from the outer circumference of the specified pole or tower with height equal to the distance from the intersection of the imaginary vertical exterior surface of the cylindroid with the ground to an intersection with a horizontal plane passing through the highest point at which a conductor is attached to such pole or tower. Flammable vegetation and materials located wholly or partially within the firebreak space shall be treated as follows:

1. At ground level – remove flammable materials, including but not limited to, ground litter, duff and dead or desiccated vegetation that will propagate fire

2. From 0 to 2.4 m (0- to 8 feet) above ground level remove flammable trash, debris or other materials, grass, herbaceous and brush vegetation. All limbs and foliage of living trees shall be removed up to a height of 2.4 m (8 feet).

3. From 2.4 m (8 feet) to horizontal plane of highest point of conductor attachment remove dead, diseased or dying limbs and foliage from living sound trees and any dead, diseased or dying trees in their entirety.

Local

Kern County General Plan

The Kern County General Plan contains goals, policies and implementation measures that are applicable to public health and safety issues. These goals, policies and implementation measures are listed below.

Chapter 1. Land Use, Open Space, and Conservation Element

Section 1.4 Public Facilities and Services

Policies

Policy 1. New discretionary development will be required to pay its proportional share of the local costs of infrastructure improvements required to service such development.

Policy 6. The County will ensure adequate fire protection to all Kern County residents.

Policy 7. The County will ensure adequate police protection to all Kern County residents.

Implementation Measures

Implementation Measure L. Prior to the approval of development projects, the County shall determine the need for fire protection services. New development in the County shall not be approved unless adequate fire protection facilities and resources can be provided.

Section 1. 10 General Provisions

Goals

*Goal 1***.** Ensure that the County can accommodate anticipated future growth and development while maintaining a safe and healthful environment and a prosperous economy by preserving viable natural resources, guiding development away from hazardous areas, and assuring the provision of adequate public services.

Section 1.10.1 Public Services and Facilities (General Provisions Element)

Policies

Policy 9. New development should pay its pro rata share of the local cost of expansions in services, facilities, and infrastructure that it generates and upon which it is dependent.

Policy 15. Prior to approval of any discretionary permit, the County shall make the finding, based on information provided by the California Environmental Quality Act (CEQA) documents, staff analysis, and the applicant, that adequate public or private services and resources are available to serve the Project.

Policy 16. The developer shall assume full responsibility for costs incurred in service extension or improvements that are required to ensure the project. Cost sharing or other forms of recovery shall be available when the service extensions or improvements have a specific quantifiable regional significance.

Chapter 2. Circulation Element

Section 2.5.2 Airport Land Use Compatibility Plan (ALUCP)

Goal

Goal 1. Plan for land uses that are compatible with public airport and military bases and mitigate encroachment issues.

Policy

Policy 2. To the extent legally allowable prevent encroachment on public airport and military base operations from incompatible, unmitigated land uses.

Implementation Measures

Implementation Measure A. Review discretionary land use development applications within the airports influence area and the military base operating area as shown in the Airport Land Use Compatibility Plan (ALUCP) for consistency.

Implementation Measure B. Coordinate and cooperate with airport operators, the County Department of Airports, the California Department of Transportation, Division of Aeronautics, affected cities, Edwards Air Force Base, NAWS China Lake, and the U.S. Department of Defense on ALUCP, review of land use applications, public education and encroachment issues.

Chapter 4. Safety Element

Goals

Goal 1. Minimize injuries and loss of life and reduce property damage.

Goal 2. Reduce economic and **social** disruption resulting from earthquakes, fire, flooding, and other geologic hazards by assuring the continuity of vital emergency public services and functions.

Goal 5. Ensure the availability and effective response of emergency services following a catastrophic event.

Goal 7. Ensure that adequate emergency services and facilities are available to the residents of Kern County through the coordination of planning and development of emergency facilities and services.

Policies

Policy 2. Those hazardous areas, identified as unsuitable for human occupancy, are guided toward open space uses, such as agriculture, wildlife habitat, and limited recreation.

Policy 3. That the County government encourage public support of local, State, and federal research programs on geologic, fire, flood hazards, valley fever, plague, and other studies so that acceptable risk may be continually reevaluated and kept current with contemporary values.

Implementation Measures

Implementation Measure A. All hazards (geologic, fire, and flood) should be considered whenever a Planning Commission or Board of Supervisor's action could involve the establishment of a land use activity susceptible to such hazards.

Implementation Measure C. Require detailed site studies for ground shaking characteristics, liquefaction potential, dam failure inundation, flooding potential, and fault rupture potential as background to the design process for critical facilities under County discretionary approval.

Chapter 4.6. Wildland and Urban Fire (Safety Element)

Hazard Identification

- Access and Evacuation Routes – Good planning principles, as well as existing policies and laws, dictate that all developments must be planned with circulation routes that will assure safe access for fire and other emergency equipment. The circulation routes must include secondary means of ingress and egress, consistent with topography, to meet emergency needs.
- The general circulation routes are provided throughout the County by federal, State, and County-maintained road systems which are adequate for access and evacuation. State and County laws regulate the standards for new public circulation routes.

- Private circulation routes that are not maintained by the State or County are subject to the standards set forth in Kern County Ordinance No. G-1832.
- Clearance of Vegetative Cover for Fire Control - In 1963 the State of California enacted the Public Resources Code clearance law. This is a minimum Statewide clearance law of flammable vegetative growth around structures, especially in brush- and tree- covered watershed areas. The enactment of a local ordinance is necessary where more restrictive fire safety clearance measures are desirable to meet local conditions.
- Fuel Breaks and Firebreaks - Fuel breaks and/or firebreaks separating communities or clusters of structures from the native vegetation may be required. Such fuel breaks may be "greenbelts," as all vegetation need not be removed but thinned or landscaped to reduce the volume of fuel.
- All fuel and firebreaks are required to meet the minimum design standards of the Kern County Fire Chief.
- The Fire Department's Chief may require a fire plan for a development during the critical fire season. This plan should reflect the proposed course of action for fire prevention and suppression.
- The parcel size and setback distances of buildings placed thereon should be such that adequate clearance of flammable vegetation cover may be performed within the limits of the owner's parcel of land.
- Should the owner of a property fail to apply the required firebreak clearance, following proper notice, the County may elect to clear the firebreak vegetation and make the expense of the clearing a lien against the property upon which the work was accomplished.
- Hazardous Fire Area - The Hazardous Fire Areas consists mainly of wildlands, which are mountain and hill land in an uncultivated, more or less natural state, covered with timber, wood, brush, and grasslands. This area includes some urban influence and agricultural use, such as exists around Isabella Lake and the Kern River, Woody/Glennville, Tehachapi/Cummings Valley, and Lebec/Frazier Park/Lake of the Woods.
- The wildlands provide prime habitats for deer, mountain lions, bears, kit foxes, quail, chucker, wild turkeys, and condors. They also harbor fifteen identified and important rare botanic communities and vegetation associations.
- The Kern County Hazardous Fire Area was established by an amendment to the Uniform Fire Code, Section 1.49H under Section 4016 of the Kern County Ordinance Code.

- The boundaries of the Hazardous Fire Area are determined and publicly announced before the start of each annual "fire season" and is normally the period from April 15 to December 1 of each year, except when the Fire Chief extends this period.
- The wildlands include valuable watersheds that must be preserved for receiving and passing water into surface streams and underground storage. Protection of the watersheds will prevent erosion and flood damages.
- For the protection of our wildlands we must consider all factors which will aid in fulfilling the policy stated in the California Environmental Quality Act, Public Resources Code Section 21000 et seq., to "create and maintain conditions under which man and nature can exist in productive harmony to fulfill the social and economic requirements of present and future generations. "
- In implementing their Fire Prevention Program, Fire Department personnel periodically inspect the areas around all buildings for accumulations of flammable material and closure of openings of vacant buildings.

Policies

Policy 1. Require discretionary projects to assess impacts on emergency services and facilities.

Policy 2. The County will encourage the promotion of public education about fire safety at home and in the work place.

Policy 3. The County will encourage the promotion of fire prevention methods to reduce service protection costs and costs to taxpayers.

Policy 4. Ensure that new development of properties have sufficient access for emergency vehicles and for the evacuation of residents.

Policy 6. All discretionary projects shall comply with the adopted Fire Code and the requirements of the Fire Department.

Implementation Measure

Implementation Measure A. Require that all development comply with the requirements of the Kern County Fire Department or other appropriate agency regarding access, fire flows, and fire protection facilities.

Chapter 5. Energy Element

Section 5.4.2 Wind Energy Development

Goal:

To promote the safe and orderly development of wind energy as a clean method of generating electricity while providing for the protection of the environment.

Policies

Policy 4. The County shall work with the wind energy industry to maximize electrical potential while assuring that military flight operations, communication facilities and visual conflicts for neighboring property owners are addressed.

Kern County ALUCP – Section 1.0 General Applicability

Section 1.7.1(c). Prior to the approval of a proposal involving any type of land use development, as stated in Section 1.6.1, or other review as required by a Specific Plan, specific findings shall be made that such development is compatible with the training and operational missions of the military aviation installations. Incompatible land uses that result in significant impacts on the military mission of Department of Defense installations or to the Joint Service Restricted R-2508 Complex that cannot be mitigated, shall not be considered consistent with this plan.

Kern County Zoning Ordinance (Title 19), Revised March 2009

Chapter 19.08 Interpretation and General Standards

This section restricts the height of structures or buildings to the maximum permitted heights shown in Figure 3.11-1 unless the military authority responsible for operations in that flight area first provides the planning director with written concurrence that the height of the proposed structure or building would create no significant military mission impacts. The entire TWP site is located within an area on Figure 3.11-1 shown as yellow (review required for all structures over 500 feet). Without military review, those structures falling within the yellow zone would be limited to 500 feet above ground elevation.

Chapter 19.64 Wind Energy (WE) Combining District

The WE Combining District (Chapter 19.64) contains development standards and conditions (Section 19. 64.140) that would be applicable to the siting and operation of WTGs. The following provisions apply to hazards and hazardous materials issues related to the Proposed Action.

Section 19.64.140 Development Standards and Conditions

This section of the Zoning Ordinance sets forth setback requirements for WTGs, requires nonreflective paint on WTGs, and specifies security fencing requirements. The setback requirements are listed below.

1. **Setback Where Adjacent Parcels Contain Less Than Forty (40) Acres.** A minimum wind generator setback of two (2) times the overall machine height (measured from grade to the top of the structure, including the uppermost extension of any blades) or 500 feet, whichever is less, shall be maintained from exterior project boundaries where the project site is adjacent to existing parcels of record which contain less than forty (40) acres and are not zoned WE Combining District.

   The Planning Director may allow a reduction in this setback, not to exceed a minimum setback of one (1) times the overall machine height (measured from grade to the top of the structure, including the uppermost extension of any blades) if a letter of consent from the owner(s) of record of adjacent parcels is filed with the Kern County Planning and Community Development Department.

2. **Setback Where Adjacent Parcels Contain Forty (40) Acres or More.** A minimum wind generator setback of one and one-half (1 1/2) times the overall machine height (measured from grade to the top of the structure, including the uppermost extension of any blades) or 500 feet, whichever is less, shall be maintained from all exterior project boundaries.

   The Planning Director may allow a reduction or waiver of this setback requirement in accordance with both of the following provisions:

   a. The project exterior boundary is a common property line between two (2) or more approved wind energy projects or both properties are located within the WE District; and

   b. The property owner of each affected property has filed a letter of consent to the proposed setback reduction with the Planning Director.

3. **Setback From Off-site Residence(s) on Adjacent Parcels.** In all cases, regardless of parcel area, a minimum wind generator setback of one and one-half (1 1/2) times the overall machine height (measured from grade to the top of the structure, including the uppermost extension of any blades) or 500 feet, whichever is greater, shall be maintained from any off-site residence.

   The Planning Director may allow a reduction in this setback, not to exceed a minimum setback of one (1) times the overall machine height, if a letter of consent from the owner(s) of record of the adjacent parcel is filed with the Planning Director.

4. **Project Interior Wind Generator Spacing.** Wind generator spacing within the project boundary shall be in accordance with accepted industry practices pertaining to the subject machine.

5. **Setback From Onsite Residences and Accessory Structures Designed for Human Occupancy.** A minimum wind generator setback of one (1) times the overall machine

height (measured from grade to the top of the structure, including the uppermost extension of any blade) shall be maintained from any Onsite residence or accessory structure designed for human occupancy.

6. **Setback from Public Highways and Streets, Public Access Easements, Public Trails, and Railroads.** A minimum wind generator setback of one and one-half (1 1/2) times the overall machine height (measured from grade to the top of the structure, including the uppermost extension of any blade) shall be maintained from any publicly maintained public highway or street. A minimum wind generator setback of one (1) times the overall machine height shall be maintained from any public access easement or railroad ROW. A minimum wind generator setback of 150 feet shall be maintained from the outermost extension of any blade to any public trail, pedestrian easement, or equestrian easement.

Section 19.64.150 Wind Turbine Maintenance and Abandonment

A. Except for maintenance periods, wind turbines shall be maintained in an operational condition. A turbine or group of turbines seeking, but unable to obtain transmission service or a power purchase agreement and out of service for that reason, shall be considered to be in a maintenance period provided such wind turbines are otherwise viable by general industry practices.

B. Any wind turbine not in operational condition for a consecutive period of twelve (12) months shall be deemed abandoned and shall be removed within sixty (60) days from the date a written notice is sent to the property owner and turbine owner, as well as the project operator, by the County. Within this sixty- (60-) day period, the property owner, turbine owner, or project operator may provide the Planning Director with a written request and justification for an extension for an additional twelve (12) months.

The Planning Director shall consider any such request at a Director's Hearing as provided for in Section 19.102.070 of this title. In no case shall the Planning Director authorize an extension beyond two (2) years from the date the wind turbine was deemed abandoned without requiring financial assurances to guarantee the removal of the wind turbine, and that portion of the support structure lying above the natural grade level, in the form of a corporate surety bond, irrevocable letter of credit, or an irrevocable certificate of deposit wherein the County is named as the sole beneficiary. In no case shall a wind turbine, which has been deemed abandoned be permitted to remain in place for more than forty-eight (48) months from the date the wind turbine was first deemed abandoned.

C. If the property owner fails to remove an abandoned wind turbine within the time frame specified above, the County may remove the structure(s) at the property owner's expense and lien the property to recover all enforcement and removal costs; however, the County shall first notify the property owner of its intent to remove the structure(s) in accordance with this section in writing at least thirty (30) days prior to removing said structure(s). The

County shall not issue any grading or building permits for any new development on the subject property until any such lien has been paid in full.

Kern County Wildland Fire Management Plan (2009)

The Kern County Wildland Fire Management Plan documents the assessment of wildland fire situations throughout the SRAs within the County. The Kern County Fire Department Wildland Fire Management Plan provides for systematically assessing the existing levels of wildland protection services and identifying high-risk and high-value areas that are potential locations for costly and damaging wildfires. The goal of the plan is to reduce costs and losses from wildfire by protecting assets at risk through focused pre-fire management prescriptions and increasing initial attack success. Based on this assessment, preventive measures are implemented, including the creation of wildfire protection zones.

Kern County Multi-Hazard Mitigation Plan (2005)

The purpose of hazard mitigation and the plan is to reduce or eliminate long-term risk to people and property from natural hazards and their effects in Kern County, California. This plan has been prepared to meet the Disaster Mitigation Act of 2000 requirements. The plan and planning process lays out the strategy that will enable Kern County to become less vulnerable to future disaster losses.

Kern County Hazardous Waste Management Plan

In response to the growing public concern regarding hazardous waste management, State Assembly Bill 2948 (CalRecycle, 2009) enacted legislation authorizing local governments to develop comprehensive hazardous waste management plans. The intent of each plan is to ensure that adequate treatment and disposal capacity is available to manage the hazardous wastes generated within the local government's jurisdiction.

The Kern County and Incorporated Cities Hazardous Waste Management Plan (Hazardous Waste Plan) was first adopted by Kern County and each incorporated city before September 1988 and was subsequently approved by the State Department of Health Services. The Hazardous Waste Plan was updated and incorporated by reference into the Kern County General Plan in 2004 as permitted by Health and Safety Code Section 25135.7(b), and thus must be consistent with all other aspects of the Kern County General Plan.

The Hazardous Waste Plan provides policy direction and action programs to address current and future hazardous waste management issues that require local responsibility and involvement in Kern County. In addition, the Hazardous Waste Plan discusses hazardous waste issues and analyzes current and future waste generation in the incorporated cities, County, and State and federal lands. The purpose of the Hazardous Waste Plan is to coordinate local implementation of a regional action to effect comprehensive hazardous waste management throughout Kern County. The action program focuses on development of programs to equitably site needed hazardous waste management facilities; to promote onsite source reduction, treatment, and recycling; and to provide for the collection and treatment of small quantity hazardous waste generators. An

important component of the Hazardous Waste Plan is the monitoring of hazardous waste management facilities to ensure compliance with federal and State hazardous waste regulations. The siting criteria and any subsequent environmental documentation required pursuant to the CEQA would also ensure the mitigation of adverse impacts associated with the siting of any new hazardous waste facility.

3.12 Recreation

The following discussion addresses existing recreational resources within the proposed TWP area. The affected environment for this analysis describes baseline conditions, which are existing environmental conditions that contribute to recreational resources. For the purposes of this analysis, the recreation study area has been defined as the area shown within Figure 3.12-1. This study area captures all major recreation resources (listed below in Table 3.12-1) that contribute to baseline conditions and could potentially be affected by activities related to the proposed TWP.

3.12.1 Environmental Setting

Recreation Resources on the TWP Site

The Pacific Crest Trail (PCT) is a long-distance pathway through scenic terrain in the United States. Beginning in southern California at the Mexican border, the PCT travels a total distance of 2,650 miles through California, Oregon, and Washington until reaching the Canadian border.

The western-most parcel of the Project site is located immediately adjacent to the PCT, parcel 2 is located approximately one mile away from the PCT, and the eastern-most parcel is located approximately two miles away from the PCT at its closest point. See Figure 3.12-1 for a depiction of the PCT and the TWP site. There is no public access to the BLM lands that make up the Project site, therefore, the site does not contain any BLM-designated off-highway vehicle routes. Additionally, no parks or recreational facilities are located within the Project site.

Recreation Resources Surrounding the TWP Site

Kern County offers multiple outdoor recreational opportunities for hiking, backpacking, picnicking, fishing, canoeing, mountain and trail biking, swimming, and canoeing in the Project vicinity. There are several recreational facilities that surround the TWP site. For instance, there are three Kern Country parks, California State park, Campgrounds, and an Aquatic Recreation Center. See Table 3-12.1 for a list of the regional recreation areas located within a 20 mile radius of the TWP site.

Wilderness Areas

There are no designated wilderness areas within the vicinity of the TWP site. Sespe Wilderness is the closest BLM-designated wilderness area, which is located approximately 30 miles southwest of the TWP site. Other BLM-designated wilderness areas in the surrounding area, include Bright Star Wilderness (approximately 36 miles northeast), Chumash Wilderness (approximately 39 miles southwest), Kiavah and Owens Peak Wilderness (approximately 42 miles northeast), El Paso Mountains Wilderness (approximately 45 miles northeast), and the San Gabriel Wilderness (approximately 48 miles southeast).

TABLE 3.12-1
REGIONAL RECREATION AREAS

Recreation Area	Jurisdiction/ Administration	Distance from Project Site (miles)	Allowed Uses and Facilities
Middle Knob Motorized Access Zone	BLM	15	OHV use, camping, hiking, hunting
Middle Knob ACEC	BLM	15	OHV use, camping, hiking, hunting
Horse Canyon ACEC	BLM	14	OHV use, camping, hiking, hunting
Pacific Crest Trail (PCT)	US Forest Service	Adjacent to eastern boundary of the western-most parcel	Hiking, equestrian trails
Mojave West Park	Local – KCPR	15	Picnic area, ballfield
Mojave East Park	Local – KCPR	15	Picnic area, ballfield
Camelot Golf Course	Local/Private	15	Golf
Arthur B. Ripley Desert Woodland State Park	State	12.5	Picnic area, self-guided nature trail
Camp Earl Anna YMCA Campground	Local-Private	8.7	Camping, hiking
Tehachapi Mountain Park	Local – KCPR	9	Camping, hiking, equestrian trails
Brite Valley Aquatic Recreation Center	Local – TVRPD	12	Camping, fishing
Mountain Valley RV Park	Local-Private	10	RV park
Central Park/Well's Park	Local – TVRPD	12	Picnic tables, playground, gazebo, activity center
West Park	Local – TVRPD	12.5	4 softball fields, playground, picnic pavilion, activity center
Meadowbrook Park	Local – TVRPD	13	Dog park, 3 baseball fields, playground, picnic pavilion
Golden Hills Golf Course	Local – Private	15	Golf

NOTE: KCRP (Kern County Recreation and Parks), 2011; TVRPD (Tehachapi Valley Recreation and Parks District). 2011.
ACEC = Areas of Critical Environmental Concern

Areas of Critical Environmental Concern

Areas of Critical Environmental Concern (ACEC) within 20 miles of the Project boundary include the Horse Canyon ACEC and Middle Knob ACEC, which are located approximately 14 and 15 miles northeast, respectively (see Figure 3.12-2). Further ACEC locations include the Jawbone/Butterbredt ACEC (27 miles northeast), Desert Tortoise Natural Area (30 miles northeast), and Fremont-Kramer DWMA (30 miles northeast and 36 miles southeast), Mojave Fringe-toed Lizard ACEC (36 miles southeast), and the Last Chance Canyon ACEC (45 miles northeast).

3.12.2 Applicable Regulations, Plans, and Standards

Federal

Federal Land Policy and Management Act of 1976

The FLPMA establishes public land policy; guidelines for administration; and provides for the management, protection, development, and enhancement of public lands. In particular, the FLPMA's relevance to the proposed Project is that Title V, Section 501, which establishes BLM's authority to grant ROWs for the generation, transmission, and distribution of electrical energy. Under the FLPMA, the BLM is responsible for the development of energy resources on BLM-administered lands in a manner that balances diverse resource uses and that takes into account the long-term needs of future generations for renewable and non-renewable resources. Among those uses, the FLPMA recognizes that the public lands be managed in a manner which will provide for outdoor recreation.

BLM California Desert Conservation Area Plan

The 25 million-acre CDCA Plan covers over 12 million acres of public lands spread within the area known as the California Desert, which includes the following three deserts: the Mojave, the Sonoran, and a small portion of the Great Basin. Approximately 10 million acres of the CDCA public lands are administered by the BLM. The CDCA Plan is a comprehensive, long-range plan with goals and specific actions for the management, use, development, and protection of the resources and public lands within the CDCA, and it is based on the concepts of multiple use, sustained yield, and maintenance of environmental quality. The plan's goals and actions for each resource are established in its 12 elements. Each of the plan elements provides both a desert-wide perspective of the planning decisions for one major resource or issue of public concern as well as more specific interpretation of multiple-use class guidelines for a given resource and its associated activities. The CDCA Plan defines MUCs for BLM-managed lands in the CDCA, which includes the land area in the vicinity of the Project site to the east.

National Trails System Act of 1968

The National Trails System Act of 1968 (Public Law 90-543), was passed by Congress in 1968 to create a series of trails "to promote the preservation of, public access to, travel within, and enjoyment and appreciation of the open-air, outdoor areas and historic resources of the Nation." The Act authorized National Scenic Trails as well as National Recreation Trails and the connecting-and-side trails. National Scenic Trails are established to provide access to "spectacular natural beauty and to allow the pursuit of healthy outdoor recreation" and "extended trails so located as to provide for maximum outdoor recreation potential and for the conservation and enjoyment of the nationally significant scenic, historic, natural, or cultural qualities of the areas through which such trails may pass." In addition, the 1968 act also authorized creation of the PCT as a National Scenic Trail. As Congressionally-established long-distance trails, each trail is administered by a federal agency, such as by the U.S. Forest Service for the PCT.

Pacific Crest Trail Planning Criteria

The Pacific Crest National Scenic Trail Comprehensive Plan (USDA Forest Service, 1982) provides guidelines and criteria for design and location of the PCT. Specifically, these guidelines state that the most desirable location will avoid unattractive roads, mining areas, power and telephone lines, commercial and industrial developments, fences, and other features incompatible with the natural condition of the trail, and with its use for outdoor recreation. Where the trail encounters such developments, it should be located so as not to adversely affect, or conflict with, the purpose of the development. Natural vegetation, topography, or natural plantings shall be used, where possible, to screen objectionable features from the view of the trail user.

State

There are no state regulations that are applicable to recreational resources within the TWP site.

Local

Kern County Development Standards

The Wind Energy (WE) Combining District (Chapter 19.64) contains development standards and conditions (Section 19.64.140) that would be applicable to the sitting and operation of wind turbine generators. The following provisions apply to recreation issues related to the proposed Project.

Chapter 19.64 Wind Energy Combining District

Setback from Public Highways and Streets, Public Access Easements, Public Trails, and Railroads. A minimum wind generator setback of one and one-half times the overall machine height (measured from grade to the top of the structure, including the uppermost extension of any blade) shall be maintained from any publicly maintained public highway or street. A minimum wind generator setback of one times the overall machine height shall be maintained from any public access easement or railroad right-of-way. A minimum wind generator setback of 150 feet shall be maintained from the outermost extension of any blade to any public trail, pedestrian easement, or equestrian easement.

3.13 Social and Economic Setting

This section describes the social and economic background and existing conditions of areas in the vicinity of the TWP. As discussed in Section 4.13, it is assumed construction and operation workers for the Project would commute to the site from within Kern County, the Antelope Valley portion of Los Angeles County, and small communities in northwest San Bernardino County. Thus, this area will comprise the regional study area for the TWP. The local study area is considered to be the City of Tehachapi and the Bakersfield metropolitan area.

3.13.1 Environmental Setting

Social Setting

Population

To characterize the existing and projected future population profile of the TWP area, Table 3.13-1 summarizes the current and forecasted population trends for Kern County and the cities/census designated places (CDPs) of Tehachapi, Rosamond, Golden Hills, Edwards AFB, Stallion Springs, Lancaster, Quartz Hill, Lebec, Bear Valley Springs, Keene, Desert View Highlands, Palmdale, Arvin, California City, Frazier Park, Lake of the Woods, Mettler, Lamont, and Bakersfield. Between 2010 and 2030, Kern County is expected to grow to over 1.3 million persons. The City of Bakersfield accounts for approximately 40 percent of the Kern County 2010 total population.

Housing

To characterize the housing profile of the study area, current housing trends are summarized in Table 3.13-2. As shown in Table 3.13-2, which includes both rental units and homes for purchase, the study area contains a high number of housing units, with Kern County containing a high vacancy rate exceeding 10 percent.

A number of temporary accommodations are available at both the regional and local study area level. Research indicates that Kern County includes an estimated 63 hotels (ePodunk, 2011), while the City of Tehachapi has six large-scale hotels (City-Data, 2011). There are five large RV park facilities in Kern County, each located in the City of Bakersfield area (RV Park Store, 2011).

Economic

Employment and Economy

Kern County had a labor force of 373,600 persons and an unemployment rate of 15.5 percent in July 2011 (EDD, 2011a). Of the 315,700 employed persons within Kern County, 224,000 were employed in non-farm industries (EDD, 2011a). Based on the current labor information, over the last decade the County's labor force increased by 25.3 percent; however, recently unemployment rates have grown due to deteriorating economic conditions across the country (EDD, 2011a).

TABLE 3.13-1
POPULATION PROFILE OF THE REGIONAL STUDY AREA

Population			
	Year		
Area	**2000 Population**	**2010 Population**	**Average Annual Growth Rate (2000 – 10)**
Kern County	661,645	839,631	2.7%
Tehachapi	10,957	14,414	3.2%
Rosamond CDP	14,349	18,150	2.7%
Mojave CDP[b]	NA	4,050	NA
Golden Hills CDP	7,434	8,656	1.6%
Edwards AFB CDP[b]	NA	4,179	NA
Stallion Springs CDP[b]	NA	2,023	NA
Lancaster[a]	118,718	156,633	3.2%
Quartz Hill CDP[a,b]	NA	10,318	NA
Lebec CDP[b]	NA	1,167	NA
Bear Valley Springs CDP	4,232	5,172	2.2%
Keene CDP[b]	NA	289	NA
Desert View Highlands CDP [a,b]	NA	2,282	NA
Palmdale[a]	116,670	152,750	3.1%
Arvin	12,956	19,304	4.9%
California City	8,385	14,120	6.8%
Frazier Park CDP[b]	NA	2,632	NA
Lake of the Woods CDP[b]	NA	895	NA
Mettler CDP[b]	NA	166	NA
Lamont	13,296	15,120	1.4%
Bakersfield	247,057	347,483	4.1%
Local Study Area[c]	32,740	41,220	2.6%
Regional Study Area[d]	926,686	1,193,107	2.9%

NOTES: Cities are shown in order of their relative distance from the Project site.

a. Los Angeles County
b. Data from American Consumer Survey, CDP = Census Designated Place.
c. Tehachapi, Rosamond, and Golden Hills,
d. Kern County plus Lancaster and Palmdale.

SOURCE: U.S. Census, 2010

In comparison, California had a labor force of just over 18.0 million with a 12.4 percent unemployment rate in July 2011 (EDD, 2011b).

Table 3.13-3 summarizes the employment projections between 2008 and 2018 by industry type within the Bakersfield Metropolitan Statistical Area (MSA). Metropolitan Statistical Areas are geographic entities defined by the U.S. Office of Management and Budget (OMB) for use by federal statistical agencies in collecting, tabulating, and publishing federal statistics. An MSA contains a core urban area of 50,000 or more population and consists of one or more counties and includes the counties containing the core urban area, as well as any adjacent counties that have a

high degree of social and economic integration (as measured by commuting to work) with the urban core (U.S. Census, 2011).

TABLE 3.13-2
HOUSING PROFILE OF THE REGIONAL STUDY AREA (2010)

Housing		
	Year	
Area	2010 Total Housing Units	2010 Vacancy Rate
Kern County	266,880	10.3%
Tehachapi	2,314	11.5%
Rosamond CDP	6,215	9.6%
Mojave CDP[b]	1,729	14.2%
Golden Hills CDP	3,565	13.9%
Edwards AFB CDP[b]	1,076	39.1%
Stallion Springs CDP[b]	1,203	26.8%
Lancaster[a]	46,058	8.7%
Quartz Hill CDP[a,b]	3,762	9.2%
Lebec CDP[b]	422	18.2%
Bear Valley Springs CDP	2,476	20.4%
Keene CDP[b]	175	33.1%
Desert View Highlands CDP[a,b]	674	14.5%
Palmdale[a]	41,733	9.5%
Arvin	3,536	7.0%
California City	5,464	16.1%
Frazier Park CDP[b]	1,334	29.7%
Lake of the Woods CDP[b]	348	0.0%
Mettler CDP[b]	46	0.0%
Lamont	3,381	4.8%
Bakersfield	107,964	7.4%
Local Study Area[c]	13,823	11.6%
Regional Study Area[d]	359,107	10.0%

NOTES: Cities are shown in order of their relative distance from the Project site.

[a] Los Angeles County
[b] Data from American Consumer Survey, CDP = Census Designated Place.
[c] Tehachapi, Rosamond, Mojave, and Golden Hills,
[d] Kern County plus cities/CDPs in Los Angeles County.

SOURCE: California Department of Finance, 2010; Arizona Department of Commerce, 2010.

Due to the proximity of the City of Bakersfield to the TWP site, the data presented in Table 3.13-3 represents the employment and economic conditions of the Project area from both a regional and local study area level. As shown in Table 3.13-3, the areas of largest growth are expected to be in the Health Care and Social Assistance, Private Household Workers, Professional, Scientific and Technical Services, and Wholesale Trade industries with the areas of lowest growth projected to be in Management of Companies and Enterprises and Finance and Insurance. In addition, employment in the Farm industry is expected to decrease by 1.6 percent (1.6%).

TABLE 3.13-3
INDUSTRY EMPLOYMENT PROJECTIONS FOR 2008-2018, BAKERSFIELD MSA, KERN COUNTY

Industry Title	Annual Average Employment		Employment Change	
	2008	2018	Numerical	Percent
Self Employment	17,200	18,600	1,400	8.1
Private Household Workers	3,100	4,200	1,100	35.5
Total Farm	49,600	48,800	-800	-1.6
Mining and Lodging	10,700	11,400	700	6.5
Construction	16,500	18,000	1,500	9.1
Manufacturing	13,700	15,500	1,800	13.1
Wholesale Trade	7,700	10,200	2,500	32.5
Retail Trade	27,400	30,300	2,900	10.6
Transportation, Warehousing, and Utilities	9,600	10,700	1,100	11.5
Information	3,000	3,300	300	10.0
Finance and Insurance	5,500	5,800	300	5.5
Real Estate and Rental and Leasing	3,300	3,700	400	12.1
Professional, Scientific and Technical Services	10,500	14,100	3,600	34.3
Management of Companies and Enterprises	2,400	2,400	0	0.0
Administrative and Support and Waste Management and Remediation Services	12,200	14,800	2,600	21.3
Education Services (Private)	1,900	2,500	600	31.6
Health Care and Social Assistance	23,600	33,300	9,700	41.1
Arts, Entertainment, and Recreation	21,500	25,900	4,400	20.5
Accommodation and Food Services	19,100	23,000	3,900	20.4
Other Services	7,000	7,400	400	5.7
Federal Government	9,800	10,600	800	8.2
State Government	10,000	10,800	800	8.0
Local Government	41,700	47,200	5,500	13.2

SOURCE: EDD, 2011c

Table 3.13-4 identifies data for employment by sector for the City of Tehachapi. As shown, the City of Tehachapi contains a diverse employment sector, with the service and sales industries containing the greatest percentages of employed persons.

Government Revenues

Table 3.13-5 identifies both the financing sources and use of funds for Kern County for the fiscal year (FY) 2010-2011. As shown, intergovernmental revenues and taxation were the largest County funding source, while public protection and public assistance were the largest expenditures.

TABLE 3.13-4
CITY OF TEHACHAPI 2008 EMPLOYMENT SECTORS

Employment Sector	Percent of Employed Population
Management, Business, and Financial	12.4
Professional and Related Occupations	19.5
Service	23.2
Sales and Office	21.4
Farming, Fishing, and Forestry	1.7
Construction, Extraction, and Maintenance	11.9
Production, Transportation, and Material Moving	9.9

SOURCE: Tehachapi, 2011.

TABLE 3.13-5
GOVERNMENT REVENUE AND SPENDING FOR KERN COUNTY, FY 2010-2011

Revenue	Amount	Percent
Financing Sources		
Taxes	$353,500,880	21.62
Licenses, Permits, and Franchises	18,650,566	1.14
Fines, Forfeitures, and Penalties	21,563,314	1.32
Revenue From Use of Money and Property	18,988,250	1.16
Intergovernmental Revenues	670,449,053	41.00
Charges for Services	166,954,283	10.21
Miscellaneous	11,134,099	0.68
Other Financing Sources	243,574,172	14.89
Balances Carried Forward From Prior Year	9,480,770	0.58
Cancelation of Prior Year Reserves/ Designations	121,090,371	7.40
Total Financing Sources	*$1,635,385,758*	*100.00*
Use of Funds		
General Government	$129,377,748	7.91
Public Protection	578,107,663	35.35
Public Ways and Facilities	77,702,952	4.75
Health and Sanitation	242,749,283	14.84
Public Assistance	490,965,956	30.02
Education	8,462,381	0.52
Recreation and Cultural Services	12,079,282	0.74
Debt Service	6,901,332	0.42
Appropriation for Contingencies - general purpose	33,986,079	2.08
Provision for Reserves and Designations	55,053,082	3.37
Total Spending Requirements	*$1,635,385,758*	*100.00*

SOURCE: Kern County, 2011.

3.13.2 Applicable Regulations, Plans, and Standards

Federal

Bureau of Land Management Land Use Planning Handbook, Appendix D

As required by the Bureau of Land Management (BLM) Land Use Planning Handbook, Appendix D (BLM, 2005a), a project analysis of this type needs to consider existing socioeconomic conditions and impacts on several geographic scales. An analysis at a local level presents a challenge because the proposed Project is in a sparsely populated area, with the largest urban center being the City of Bakersfield, approximately 30 miles northwest of the site. Based on BLM requirements, a reasonable study area for localized socioeconomic impacts would include both the City of Tehachapi and the Bakersfield MSA, as described earlier in Section 3.13.1.

Bureau of Land Management California Desert Conservation Area (CDCA) Plan

The Project would be located within the boundaries of the CDCA. The CDCA Plan, which covers 25 million acres of land, serves as the BLM's land use guide for management of these public lands (BLM, 2007). The BLM West Mojave Plan serves as a Habitat Conservation Plan and CDCA amendment (BLM, 2005b). A review of both the CDCA Plan and the West Mojave Plan indicates no specific requirements regarding socioeconomics beyond those discussed by the BLM within its Land Use Planning Handbook, Appendix D (BLM, 2007, 2005a, and 2005b).

NEPA

Under NEPA (42 United States Code (USC) 4321 et seq.), an EIS must include 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 allow for economic, social, and demographic effects to be analyzed in isolation from the physical environment.

Local

Kern County General Plan (KCGP), Revised September 2009

The policies, goals, and implementation measures in the KCGP for population and housing applicable to the TWP are provided below. The KCGP contains additional policies, goals, and implementation measures that are more general in nature and not specific to development such as the Project. Therefore, they are not listed below, but, as stated in Chapter 2, "Introduction," all policies, goals, and implementation measures in the KCGP are incorporated by reference.

Chapter 1. Land Use, Open Space, and Conservation Element

Section 1.0 General Provisions

Goal 1. Ensure that the County can accommodate anticipated future growth and development while maintaining a safe and healthful environment and a prosperous

economy by preserving viable natural resources, guiding development away from hazardous areas, and assuring the provision of adequate public services.

Policy 8. The County shall ensure that new industrial uses and activities are sited to avoid or minimize significant hazards to human health and safety in a manner that avoids over concentrating such uses in proximity to schools and residents.

Implementation Measure A. The Kern Council of Governments (COG) will monitor population growth and its subsequent development effects to identify the distribution of population increases and the capabilities of governmental and public agencies to provide new development with adequate services and facilities in a fiscally acceptable manner.

Housing Element 2008-2013, Adopted 2008

The Housing Element is a separate element of the KCGP. Each City and County are required by California housing law to develop a Housing Element, one of the seven general plan elements, in order to qualify for allocation of State regional housing funding. To receive regional housing funds, each City and County must update its General Plan Housing Element on a regular basis (generally, every five years). The Housing Element must incorporate policies and identify potential sites that would accommodate the City or County's share of the regional housing needs. Kern County adopted the current Housing Element in December 2008. Because the proposed Project would not include new housing, the goals and policies of the housing element largely do not apply to the proposed Project.

3.14 Soil Resources

This section describes the existing geology, soil conditions, and seismicity in the project area in terms of local topography, geologic substrate, soil resources, and regional seismicity, and also identifies local geologic and seismic hazards that could potentially affect structures associated within the proposed TWP. This section also discusses regulations, plans, and policies including federal, State, and local laws related to geologic and seismic considerations that may be relevant to the Proposed Action.

3.14.1 Environmental Setting

Regional Geology

The TWP site is located in the Antelope Valley in southern Kern County, near the Community of Rosamond, California. This area lies within the Mojave Desert geomorphic province, which is characterized as a broad interior region of isolated mountain ranges separated by expanses of desert plains. The many playas within this region have an enclosed drainage with two important fault trends (the San Andreas and Garlock faults) that control topography. In general, this region of southern California is considered to be seismically active. See Appendix A, Figure 3.14-1 for a depiction of the Project area in proximity to the Garlock Fault.

The linear mountains and valleys along the San Andreas Fault have a distinct northwest trend, while those along the Garlock Fault have a distinct northeast trend, reflecting the seismic forces of these regionally-dominant faults. Older metamorphic and intrusive basement rocks are overlain by a thick section of sedimentary rocks. More recent soil deposits consist primarily of materials that are derived from the surrounding mountains bordering the Mojave Desert and the hills within it. These sediments typically range from coarse alluvial to clay rich sediments. The older alluvial soils, which are exposed in the upper foothills, spread out to the south and east of the mountain ranges. Recent alluvial deposits can be located in the bottom of dissecting drainages and flatter areas of the region. Numerous near vertical faults are present in the Mojave block and are sub-parallel to the San Andreas Fault with smaller horizontal displacements. The near vertical faults in the Mojave block offset Quaternary (1.6 million years old) deposits and are active or potentially active.

Local Geology

The proposed Project parcels are currently undeveloped with limited access from moderately to roughly graded unimproved roads. The parcels are located in a southeasterly sloping alluvial fan with numerous surface water erosion channels. There are a few relatively large drainages that traverse the two eastern parcels. These larger drainages experience sheet flow and occasional flash flooding. Larger named drainages that cross portions of the two eastern parcels include Tylerhorse, Gamble Springs and Burham Canyons. Vegetation is sparse and consists of scattered brush, grasses, and small trees.

According to geologic mapping, portions of the three parcels lie in either older alluvial fan materials (Qoa) or the younger, recent alluvial soils (Qa). The older soils are characterized as alluvial gravel or sand. The younger soils are located on the two eastern parcels at the outflow of the three larger drainages listed above. These younger soils are evidence that ongoing erosion has dissected the older materials at higher elevations and are comprised of silt, sand, and gravel with occasional cobbles and boulders.

According to soil survey maps compiled by the Natural Resources Conservation Service of the U.S. Department of Agriculture, the majority of on-site soils are mapped in the Hanford-Ramona-Greenfield soils complex. These soils are generally described as coarse grained soils that are well drained and the fines are typically non-plastic. These types of soils do not exhibit shrink-swell patterns and are not considered expansive soils. This is consistent with the soil observed during the TWP geotechnical drilling activities and the mechanical laboratory results.

Geologic Hazards

As described in the Safety Element of the Kern County General Plan, earthquakes are the principal geologic activity affecting public safety in the County (Kern County, 2007). Potential impacts to public safety associated with earthquakes and seismic activity, as relevant to the Proposed Action, are addressed in Section 4.11 (Public Health and Safety). The following discussion characterizes the environmental setting for geologic hazards in the TWP area, including earthquakes and seismic activity.

Seismic Ground Shaking

Several active faults within 50 miles of the TWP site present geologic hazards to the Project site and vicinity. These include the following:

- Garlock Fault (West) – 3.4 miles northwest;
- Tylerhorse Fault - 3.5 miles to the southwest;
- Cottonwood Fault - 5.0 miles to the southwest;
- White Wolf Fault - 25 miles to the west;
- San Andreas Fault - 33 miles to the west;
- Pleito Thrust Fault - 37 miles to west; and
- San Gabriel Fault - 46 miles to the southwest.

These faults have had Holocene activity (within the last 10,000 years) and produced notable earthquakes including the 1857 Fort Tejon magnitude 8.2+ earthquake along the San Andreas Fault and the 1952 Arvin/Tehachapi magnitude 7.7 earthquake on the White Wolf Fault. The two major faults in the TWP vicinity are the Garlock Fault and the San Andreas Fault, both of which are described in further detail below.

Garlock Fault

This is a major structural break trending east-northeast from its intersection with the San Andreas Fault, approximately 23 miles west of the TWP site. From this intersection, the Garlock Fault zone extends about 162 miles northeast toward Death Valley. The western segment of the Garlock Fault is located along the southern perimeter of the Tehachapi Mountains. In this segment, stream channels have been displaced by left slip movement. The western portion of the TWP site is located within an Alquist-Priolo Special Study Zone (California Fault Zone) related to the Garlock Fault. The north branch of the Garlock Fault is considered an active fault, and is a high-angle shear zone with predominant strike slip movement to the west. In the region of the TWP site, the displacement is unknown, although it is likely to be great.

San Andreas Fault

In general, this high-angle fault trends northwest and was formed early in the Pilocene Epoch. Many related faults, including the Tylerhorse Fault (3.5 miles southwest of the TWP site) and the Cottonwood Fault (5.0 miles southwest of the TWP site), offset alluvial deposits and are active or potentially active. Several of the regionally related faults, including the Galway Lake and Homestead Valley Faults, caused earthquakes and ground ruptures (right slip) in 1975 and 1979, respectively. All of these faults are considered part of the San Andreas Fault system. It has not been possible thus far to determine the nature and amount of fault displacement; however, Holocene age movement has been shown on many of these northwesterly trending faults as observed by displacement in alluvial fans and offset lines of drainage.

Numerous historic earthquakes have affected the Mojave Desert region where the TWP site is located. Table 3.14-1 provides a summary of major known seismic events in the TWP vicinity.

TABLE 3.14-1
SIGNIFICANT EARTHQUAKES AND EPICENTER LOCATIONS

Year	Name	Approximate Distance to TWP Site	Magnitude
1812	Wrightwood	53	7.0
1857	Fort Tejon	123	8.2
1872	Owens Valley	117	7.4
1952	Kern County	34	7.7
1971	San Fernando	35	6.6
1992	Landers	120	7.3
1994	Northridge	49	6.7

SOURCE: Kleinfelder, 2011.

The majority of recent seismic activity in the TWP vicinity has been associated with the White Wolf and San Andreas Faults. Earthquakes along the Garlock Fault, adjacent to the site, have not occurred within the last 200 years.

Liquefaction

Liquefaction occurs when saturated granular sediments temporarily lose their shear strength during periods of earthquake-induced strong ground-shaking. The susceptibility of a site to liquefaction is a function of the depth, density, and water content of the granular sediments and the magnitude and frequency of earthquakes in the surrounding region. Saturated, unconsolidated silts, sands, and silty sands within 50 feet of the ground surface are most susceptible to liquefaction.

According to past boring logs from the vicinity of the TWP site, groundwater was not encountered at shallow depths, and available data indicates historic high water level at a depth greater than 100 feet (Kleinfelder, 2011). The potential for the site soils to experience liquefaction during a seismic event is considered low due to the high relative density of much of the soil and the depth of groundwater being greater than 50 feet (Kleinfelder, 2011).

Lateral Spreading

Lateral spreading of the ground surface can occur within liquefiable beds during seismic events where extensional ground cracking and settlement occur as a response to lateral migration of subsurface liquefiable material. Factors such as distance from the earthquake epicenter, the magnitude of the seismic event, and the thickness and depth of liquefiable layers affect the amount of lateral spreading that may occur. Lateral spreading will typically occur adjacent to free faces, such as slopes and creek channels. Considering the general topography of the terrain and the likely absence of liquefiable materials, lateral spreading would be unlikely at the TWP site (Kleinfelder, 2011).

Dynamic Compaction

Dynamic compaction or seismically induced settlement of soils results when relatively unconsolidated granular materials experience vibration associated with seismic events. The vibration causes a decrease in soil volume, as the soil grains tend to rearrange into a more dense state. The decrease in volume can result in settlement of overlying structural improvements. (BLM, 2010)

Seismically induced settlement is generally dependent on the relative density of the subsurface soils. Most of the older alluvial soils at the TWP site are very dense and the potential for these materials to settle due to seismic shaking is very low (Kleinfelder, 2011). The younger, looser soils, especially those in the recent drainages, may have a greater potential for seismically induced settlement (Kleinfelder, 2011).

Hydrocompaction

Hydrocompaction, or hydro-collapse, is generally limited to young soils that were deposited rapidly in a saturated state, most commonly by a flash flood. The soils dry quickly, leaving an unconsolidated, low density deposit with a high percentage of voids. Foundations built on these types of compressible materials can settle excessively, particularly when landscaping irrigation

dissolves the weak cementation that is preventing the immediate collapse of the soil structure. (BLM, 2010)

Due to geologic characteristics of the TWP site, the potential for hydrocompaction to occur is considered low.

Subsidence

Subsidence is a settlement or lowering of the ground surface elevation due to factors such as tectonic movement, seismic compaction, hydrocompaction, consolidation induced by groundwater withdrawal, and consolidation under applied loads. Regional ground subsidence is typically caused by petroleum or groundwater withdrawal that increases the effective unit weight of the soil profile, increasing stress on deeper soils and resulting in consolidation or settlement of underlying soils (BLM, 2010).

Based on the local site subsurface data, the older alluvial soils on the TWP site can generally be classified as Soil Profile Type C, according to the 2010 California Building Code (CBC), which is defined as very dense soil or soft rock profile. The younger, less dense alluvial areas would generally classify as Soil Profile Type D which is defined as having a stiff soil profile. Therefore, based on the lithology present in the subsurface of the TWP site and vicinity, there appears to be a low potential for settlement or subsidence (Kleinfelder, 2011).

Expansive Soils

Expansive soils are characterized by their ability to undergo volume change (shrink and swell) due to variation in soil moisture content. Changes in soil moisture could result from precipitation, irrigation, utility leakage, and/or perched groundwater, among other factors.

The soils mapped in the proposed TWP parcels, primarily the Hanford-Ramona-Greenfield soils complex, are coarser grained soils that do not exhibit shrink-swell patterns and are not considered expansive (Kleinfelder, 2011). The soils encountered in borings conducted as part of the geotechnical investigation for the proposed TWP were consistent with these findings (Kleinfelder, 2011).

Landslides

Small landslides are common in Kern County's mountain areas, where loose material moves naturally down-slope, and/or where fires have caused loss of soil-stabilizing vegetative cover. Human activities also tend to make the earth materials less stable, increasing the potential for ground failure to occur. Human activities which contribute to landslide potential include the grading of steep slopes or overloading them with artificial fill, by extensive irrigation, construction of impermeable surfaces, excessive groundwater withdrawal, and removal of stabilizing vegetation (Kern County, 2007).

The channel banks in the vicinity of the proposed site parcels, although not very high (5 to 8 feet in some areas), are locally steep enough to experience slope failure from earthquake-induced

ground shaking (Kleinfelder, 2011). Much of the remaining surfaces of the study area are slightly sloping to relatively level, and there are no known areas of extensive fill. Therefore, the potential for landslides or other slope failures from earthquake-induced ground shaking in these areas is considered low (Kleindfelder, 2011).

3.14.2 Applicable Regulations, Plans, and Standards

Federal

International 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. As a model building code, the IBC has no legal status until it is adopted or adapted by government regulation. California has adopted the IBC. 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 to life and property from all hazards incident to the occupancy of buildings, structures and premises. With some exceptions, the California Building Code discussed below is based on the ICB.

Federal Land Policy and Management Act of 1976 as Amended

The 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 charged with the protection of life and safety from natural hazards.

California Desert Conservation Area Plan

The CDCA Plan defines multiple-use classes for BLM-managed lands within the CDCA. With respect to geological resources, the CDCA Plan aims to maintain the availability of mineral resources on public lands for exploration and development.

State

California Building Code

The California Building Code (CBC) has been codified in the California Code of Regulations (CCR) as Title 24, Part 2. Title 24 is administered by the California Building Standards Commission, which, by law, is responsible for coordinating all building standards. Under State law, all building standards must be centralized in Title 24 or they are not enforceable. The purpose of the CBC is to establish minimum standards to safeguard the public health, safety and general welfare through structural strength, means of egress facilities, and general stability by

regulating and controlling the design, construction, quality of materials, use and occupancy, location, and maintenance of all building and structures within its jurisdiction. The CBC is based on the International Building Code. The 2010 CBC is based on the 2009 International Building Code (IBC) published by the International Code Conference. In addition, the CBC contains necessary California amendments which are based on reference standards obtained from various technical committees and organizations such as the American Society of Civil Engineers (ASCE), the American Institute of Steel Construction (AISC), and the American Concrete Institute (ACI). ASCE Minimum Design Standards 7-05 provides requirements for general structural design and includes means for determining earthquake loads as well as other loads (flood, snow, wind, etc.) for inclusion into building codes. The provisions of the CBC apply to the construction, alteration, movement, replacement, and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures throughout California.

The earthquake design requirements take into account the occupancy category of the structure, site class, soil classifications, and various seismic coefficients which are used to determine a Seismic Design Category (SDC) for a project. The SDC is a classification system that combines the occupancy categories with the level of expected ground motions at the site and ranges from SDC A (very small seismic vulnerability) to SDC (very high seismic vulnerability and near a major fault). Design specifications are then determined according to the SDC.

Local

Kern County General Plan

The policies, goals, and implementation measures in the Kern County General Plan for geology and soils applicable to the Project are provided below. The Kern County General Plan contains additional policies, goals, and implementation measures that are more general in nature and are not specific to development such as the proposed Project.

Section 1.3 Physical and Environmental Constraints

Policy 1. Kern County will ensure that new developments will not be sited on land that is physically or environmentally constrained (Map Code 2.1 [Seismic Hazard], Map Code 2.2 [Landslide], Map Code 2.3 [Shallow Groundwater], Map Code 2.5 [Flood Hazard], Map Codes from 2.6 – 2.9, Map Code 2.10 [Nearby Waste Facility], and Map Code 2.11 [Burn Dump Hazard]) to support such development unless appropriate studies establish that such development will not result in unmitigated significant impact.

Policy 6. Regardless of percentage of slope, development on hillsides will be sited in the least obtrusive fashion, thereby minimizing the extent of topographic alteration required and reducing soil erosion while maintaining soil stability.

Policy 7. Ensure that effective slope stability, wastewater drainage, and sewage treatment in areas with steep slopes are adequate for development.

Section 1.9 Resource (Land Use, Open Space, and Conservation Element)

Policy 17. Lands classified as MRZ-2, as designated by the State of California, should be protected from encroachment of incompatible land uses.

Section 4.3 Seismically Induced Surface Rupture, Ground Shaking, and Ground Failure (Safety Element)

Policy 1. The County shall require development for human occupancy to be placed in a location away from an active earthquake fault in order to minimize safety concerns.

Section 4.5 Landslides, Subsidence, Seiche, and Liquefaction (Safety Element)

Policy 1. Determine the liquefaction potential at sites in areas of shallow groundwater (Map Code 2.3) prior to discretionary development and determine specific mitigation to be incorporated into the foundation design, as necessary, to prevent or reduce damage from liquefaction in an earthquake.

Policy 2. Route major lifeline installations around potential areas of liquefaction or otherwise protect them against significant damage from liquefaction in an earthquake.

Policy 3. Reduce potential for exposure of residential, commercial, and industrial development to hazards of landslide, land subsidence, liquefaction, and erosion.

Section 5 Energy Element

Policy 2. All wind energy development shall be subject to the development standards of Kern County Zoning Ordinance.

Kern County Zoning Ordinance

Chapter 19.64 Wind Energy Combining District

The Wind Energy Combining District contains the following sections applicable to geology and soils:

Section 19.64.140(A): All necessary building and grading permits shall be obtained from the Kern County Planning Department. For construction and permit purposes, all wind turbine generator towers shall conform to the regulations of the applicable seismic zone of the Uniform Building Code and the applicable ground shaking zone.

Section 19.64.140(K): Prior to issuance of any grading permit, a plan for the mitigation of potential soil erosion and sedimentation shall be prepared by a California registered civil engineer or other professional and submitted for the approval by the Director of the Engineering and Survey Services Department.

Section 19.64.140(L): A minimum of on-site roadways shall be constructed. Temporary access roads utilized for initial machine installation shall be revegetated to a natural condition after completion of machine installation. The project applicant shall submit a

plan of all proposed roads, temporary and permanent, for approval by the Planning Director prior to the issuance of any building permits.

Section 19.64.140(M): Construction of any slopes steeper than four to one (4:1) shall be prohibited unless specifically authorized by the Kern County Planning Department and mitigation is provided.

Section 19.64.130(N): Soil erosion and sedimentation control plan, including revegetation plan, as provided in Section 19.64.140 (grading permits only).

Kern County Code of Building Regulations

All construction in Kern County is required to conform to the Kern County Building Code (Chapter 17.08, Building Code, of the Kern County Code of Regulations). Kern County has adopted the Uniform Building Code, 2007 Edition, with some modifications and amendments. The entire County is in Seismic Zone 4, a designation previously used in the UBC to denote the areas of highest risk to earthquake ground motion. California has an Unreinforced Masonry program that details seismic safety requirements for Zone 4. Kern County has adopted the seismic provisions associated with Seismic Zone 4.

Chapter 17.28 Kern County Grading Code

The purpose of the Kern County Grading Code is to safeguard life, limb, property and the public welfare by regulating grading on private property. All requirements of the Kern County Grading Code will be applied during implementation of the proposed project. All required grading permit(s) shall be obtained prior to commencement of construction activities. Sections of the Grading Code that are particularly relevant to geology and soils are provided below.

Section 17.28.140 Erosion Control

A. **Slopes.** The faces of cut and fill slopes shall be prepared and maintained to control against erosion. This control may consist of effective planting. The protection for the slopes shall be installed as soon as practicable and prior to calling for final approval. Where cut slopes are not subject to erosion due to the erosion-resistant character of the materials, such protection may be omitted.

B. **Other Devices.** Where necessary, check dams, cribbing, riprap or other devices or methods shall be employed to control erosion and provide safety.

C. **Temporary Devices.** Temporary drainage and erosion control shall be provided as needed at the end of each work day during grading operations, such that existing drainage channels would not be blocked. Dust control shall be applied to all graded areas and materials and shall consist of applying water or another approved dust palliative for the alleviation or prevention of dust nuisance. Deposition of rocks, earth materials or debris onto adjacent property, public roads or drainage channels shall not be allowed.

Section 17.28.170 Grading inspection.

A. **General.** All grading operations for which a permit is required shall be subject to inspection by the building official. Professional inspection of grading operations and testing shall be provided by the civil engineer, soils engineer and the engineering geologist retained to provide such services in accordance with Subsection 17.28.170(E) for engineered grading and as required by the building official for regular grading.

B. **Civil Engineer.** The civil engineer shall provide professional inspection within such engineer's area of technical specialty, which shall consist of observation and review as to the establishment of line, grade and surface drainage of the development area. If revised plans are required during the course of the work they shall be prepared by the civil engineer.

C. **Soils Engineer.** The soils engineer shall provide professional inspection within such engineer's area of technical specialty, which shall include observation during grading and testing for required compaction. The soils engineer shall provide sufficient observation during the preparation of the natural ground and placement and compaction of the fill to verify that such work is being performed in accordance with the conditions of the approved plan and the appropriate requirements of this chapter. Revised recommendations relating to conditions differing from the approved soils engineering and engineering geology reports shall be submitted to the permittee, the building official and the civil engineer.

D. **Engineering Geologist.** The engineering geologist shall provide professional inspection within such engineer's area of technical specialty, which shall include professional inspection of the bedrock excavation to determine if conditions encountered are in conformance with the approved report. Revised recommendations relating to conditions differing from the approved engineering geology report shall be submitted to the soils engineer.

E. **Permittee.** The permittee shall be responsible for the work to be performed in accordance with the approved plans and specifications and in conformance with the provisions of this Code, and the permittee shall engage consultants, if required, to provide professional inspections on a timely basis. The permittee shall act as a coordinator between the consultants, the contractor and the building official. In the event of changed conditions, the permittee shall be responsible for informing the building official of such change and shall provide revised plans for approval.

F. **Building Official.** The building official may inspect the project at the various stages of the work requiring approval to determine that adequate control is being exercised by the professional consultants.

G. **Notification of Noncompliance.** If, in the course of fulfilling their responsibility under this chapter, the civil engineer, the soils engineer, or the engineering geologist finds that the

work is not being done in conformance with this chapter or the approved grading plans, the discrepancies shall be reported immediately in writing to the permittee and to the building official. Recommendations for corrective measures, if necessary, shall also be submitted.

H. **Transfer of Responsibility.** If the civil engineer, the soils engineer, or the engineering geologist of record is changed during the course of the work, the work shall be stopped until both of the following have occurred:

1. The civil engineer, soils engineer, or engineering geologist has notified the building official in writing that they will no longer be responsible for the work and that a qualified replacement has been found who will assume responsibility.

2. The replacement civil engineer, soils engineer, or engineering geologist notifies the building official in writing that they have agreed to accept responsibility for the work.

3.15 Special Designations

The following discussion addresses existing special designations in the vicinity of the proposed TWP and existing laws and regulations relevant to special designations.

3.15.1 Environmental Setting

Areas of Critical Environmental Concern

Area of Critical Environmental Concern (ACEC) is a BLM designation used to manage public land areas where special attention is necessary to protect and prevent irreparable damage to: important historical, cultural, and scenic values; fish or wildlife resources; or other natural systems or processes based on the specific ACEC management plan. The ACEC designation may also be used to protect human life and safety from natural hazards. ACECs within 15 miles of the Project boundary include the Horse Canyon ACEC and Middle Knob ACEC, which are located approximately 14 and 15 miles northeast, respectively. More distant ACECs include the Jawbone/Butterbredt ACEC (27 miles northeast), Desert Tortoise Natural Area (30 miles northeast), and Fremont-Kramer DWMA (30 miles northeast and 36 miles southeast), Mojave Fringe-toed Lizard ACEC (36 miles southeast), and the Last Chance Canyon ACEC (45 miles northeast).

Horse Canyon ACEC

The Horse Canyon ACEC is managed by the BLM under the Caliente Resource Management Plan (RMP), and consists of 1,530 acres designated as an ACEC because of its significant natural, cultural and historic resources. The proposed TWP would be located approximately 14 miles southwest of this ACEC.

Middle Knob ACEC

The Middle Knob ACEC is managed by the BLM, comprises 20,511 acres, and is designated as an ACEC because of its significant biological and cultural resources. The proposed TWP would be located approximately 15 miles southwest of this ACEC.

National Scenic Byways

The National Scenic Byways Program is part of the U.S. Department of Transportation, Federal Highway Administration. The program is a collaborative effort established to help recognize, preserve and enhance selected roads throughout the United States.

BLM's Byways Program, established in 1989, is a component of the National Scenic Byways Program. BLM State Directors designate BLM Back Country Byways on BLM public lands. Other Byway designations – such as National Scenic Byways, All-American Roads, State Scenic Byways, or National Forest Scenic Byways – may also occur on portions of BLM lands, but must be designated through a State Department of Transportation or other Federal agency. The nearest

National Scenic Byway is the Chimney Peak Back Country Byway located over 50 miles northeast of the TWP. Therefore, no National Scenic Byways are in the vicinity of the proposed TWP.

National Recreation Areas

National Recreation Areas are federally protected recreation areas that are typically centered on large reservoirs and emphasize water-based recreation. No national recreation areas are in the vicinity of the proposed TWP.

National Scenic and Historic Trails

National Scenic Trails are federally protected extended trails designated for their maximum outdoor recreation potential and the conservation and enjoyment of the various qualities – scenic, historical, natural, and cultural – of the areas they pass through. National Historic Trails are federally designated extended trails that closely follow a historic trail or route of travel of national significance. The proposed TWP is adjacent to a segment of the Pacific Crest National Scenic Trail (PCT) in the southern half of Section 28, Township 10 North, Range 15 West of the San Bernardino Meridian. The PCT is a long-distance pathway through scenic terrain in the United States. Beginning in southern California at the Mexican border, the PCT travels a total distance of 2,650 miles through California, Oregon, and Washington until reaching the Canadian border.

National Wild and Scenic Rivers

National Wild and Scenic Rivers are federally protected rivers designated for their outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations. The closest wild and scenic river to the Project site is the Kern Wild and Scenic River located 40 miles to the northwest. Therefore, no wild and scenic rivers are located within the immediate vicinity of the proposed TWP.

National Wilderness Areas

National Wilderness Areas are federally protected wilderness areas designated for preservation in their natural condition. As shown in Figure 3.15-1, there are no designated National Wilderness Areas within the vicinity of the TWP site. Sespe Wilderness, located approximately 30 miles to the southwest, is the closest BLM-designated Wilderness Area to the TWP site. Other BLM-designated wilderness areas in the surrounding area, include Bright Star Wilderness (approximately 36 miles northeast), Chumash Wilderness (approximately 39 miles southwest), Kiavah and Owens Peak Wilderness (approximately 42 miles northeast), El Paso Mountains Wilderness (approximately 45 miles northeast), and the San Gabriel Wilderness (approximately 48 miles southeast).

National Wilderness Study Areas

Wilderness Study Areas (WSA) are federally designated areas that have special qualities such as ecological, geological, educational, historical, scientific and scenic values. The closest WSA is the Paiute Cypress WSA located 29 miles northwest of the TWP site. Therefore, no WSAs are in the immediate vicinity of the proposed site.

State Farmland

According to the California Department of Conservation (DOC) Farmland Mapping and Monitoring Program (FMMP), the TWP site is located on land that is designated as Nonagriculture and Natural Vegetation (DOC, 2008). The Nonagriculture and Natural Vegetation designations include heavily wooded, rocky or barren areas, riparian and wetland areas, grassland areas which do not qualify for grazing, and small water bodies. Constructed wetlands are also included under the Nonagriculture and Natural Vegetation designation (DOC, 2008).

3.15.2 Regulatory Framework

Federal

Federal Land Policy and Management Act

The FLPMA was enacted in 1976 for the purposes of establishing a unified, comprehensive, and systematic approach to managing and preserving public lands in a way that protects "the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archeological values." In the context of the FLPMA, public lands consist of federally-owned lands that have not been set aside for national forests and parks, wildlife preservation areas, military bases, or other federal purposes. The FLPMA is administered by the BLM, which manages some 261 million acres of public lands comprising 12 percent of the United States.

Under the FLPMA, the BLM is required to establish a planning process for the management of public lands that accommodates multiple uses of the land and its resources and achieves sustained yields of natural resources. As part of its management responsibilities, the BLM is required to periodically inventory all public lands and the resources on those lands. The FLPMA sets a goal of preserving and protecting public lands in their natural condition to the extent possible and to retain federal ownership of public lands unless it is in the national interest to dispose of them. Where it is appropriate to sell federal lands, the FLPMA requires that fair market value be received for the lands. Uses of public lands that the BLM manages include commercial uses such as livestock grazing, mineral extraction, and logging; recreational uses such as fishing, hunting, birding, boating, hiking, biking, and off-roading; and conservation of biological, archeological, historical, and cultural resources.

California Desert Conservation Area (CDCA)

The CDCA is a 25-million acre expanse of land in southern California designated by Congress in 1976 through the FLPMA. About 10 million acres are administered by the BLM. 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 directed BLM to prepare and implement a comprehensive, long-range plan for the management, use, development and protection of the public lands within the CDCA.

Wilderness Act

In 1964, Congress established the National Wilderness Preservation System and designated the first Wilderness Areas in passing the Wilderness Act. The Wilderness Act was passed to protect federally owned areas that have been designated as “wilderness areas” for the protection of wildlife and enjoyment of future generations. The uniquely American idea of wilderness has become an increasingly significant tool to ensure long-term protection of natural landscapes. Wilderness protects the habitat of numerous wildlife species and serves as a biodiversity bank for many species of plants and animals. Wilderness is also a source of clean water. It has long been used for science and education as well as for higher education purposes, providing sites for field trips, study areas for student research, and serving as a source of instructional examples. Recreation is another obvious appeal of wilderness, and wilderness areas are seeing steadily increasing use from people who wish to experience freedom from the Nation’s fast-paced industrialized society.

The BLM is responsible for 221 Wilderness Areas with 8.7 million acres in 10 Western States (3 percent of BLM's total acreage in the coterminous United States). Wilderness areas are special places where the earth and its community of life are essentially undisturbed.

National Landscape Conservation System (NLCS)

The NLCS is the primary management framework for specially designated lands or Special Management Areas (SMAs). In June 2000, the NLCS was created by the BLM to bring some of the agency’s premier areas into a single system. The NLCS designations include National Monuments, National Conservation Areas, Designated Wilderness Areas and WSA, National Scenic and Historic Trails, and Wild, Scenic, and Recreational Rivers (BLM, 2011). Special areas managed by the BLM outside of the NLCS framework include ACECs, Research Natural Areas, National Natural Landmarks, National Recreation Trails, and a variety of other area designations.

The BLM manages certain lands under its jurisdiction that possess unique and important historical, anthropological, ecological, biological, geological, and paleontological features. These features include undisturbed wilderness tracts, critical habitat, natural environments, open spaces, scenic landscapes, historic locations, cultural landmarks, and paleontologically rich regions. Special management is administered with the intent to preserve, protect, and evaluate these significant components of our national heritage. Most special areas are either designated by an Act of Congress or by Presidential Proclamation, or are created under BLM administrative procedures.

State

Special Designations refer specifically to the BLM and are not relevant to State government.

Kern County

Special Designations refer specifically to the BLM and are not relevant to Kern County.

3.16 Transportation and Public Access

This section describes the existing conditions related to transportation and public access related to the proposed TWP, including applicable plans, policies and regulations. The information presented in this section is based on the *Tylerhorse Wind Energy Project Traffic Study,* December 29, 2011, prepared by Ruettgers & Schuler.

3.16.1 Environmental Setting

Public Access

Recreation and motorized travel opportunities are determined, in part, by the CDCA Multiple Use Class and by OHV area designations. The multiple-use class is based on the sensitivity of resources and kinds of uses for each geographic area. Each of the four multiple-use classes describes a different type and level or degree of use which is permitted within that particular geographic area. The BLM is also required to designate all public lands as either open, limited, or closed to off-road vehicles under Executive Orders (E.O. 11644 and E.O. 11989: Use of Off-Road Vehicles on the Public Lands), other authorities, such as the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701 *et seq.)*, BLM planning regulations in 43 CFR 1600 and the BLM Land Use Planning Handbook H-1600-1. For the purpose of this section, the terms *Off-Road Vehicles* and *Off Highway Vehicles* (OHV), are used interchangeably (OHV is the term most used in BLM and other federal land use planning).

OHV Routes

The CDCA Plan states that vehicle access is among the most important recreation issues in the desert. A primary consideration of the recreation program is to ensure that access routes necessary for recreation enjoyment are provided (BLM, 2002).

During the CDCA planning process, a detailed inventory and designation of routes was developed. This route designation system, along with other land management actions, such as setting aside areas of critical environmental concern (ACECs) and the congressional designation of wilderness areas, has resulted in a significant loss of OHV recreation opportunities in Kern County.

Under the CDCA Plan, travel routes are classified as *Open, Limited* or *Closed* with the following definitions:

1. **Open Route:** Access by motorized vehicles is allowed.

2. **Limited Route:** Access by motorized vehicles is limited to use by number of vehicles, type of vehicle, time or season, permitted or licensed, or speed limits.

3. **Closed Route:** Access by motorized vehicles is prohibited except for authorized use.

Currently, there are no BLM-designated travel routes on or in the vicinity of the TWP site.

The BLM has no traffic counters or other means to determine accurate use of routes in the vicinity of the TWP site. Observations by BLM staff and Law Enforcement Rangers indicate that use is relatively low on routes through or adjacent to the TWP site, not exceeding 200-300 visits per year. Recreation and vehicle use is generally limited to the cooler months of September through May. Use is nearly non-existent during the summer months. Recreational vehicle use consists of touring in passenger cars, SUVs, motorcycles, and ATVs. Some camping may occur in the vicinity of the site, but most use is of short duration and by local residents. More attractive recreation opportunities occur in areas where the BLM has provided facilities such as the Midland Long Term Visitor Area (LTVA), ACECs, or other scenic, natural, or cultural attractions.

Transportation

The proposed TWP would be located in Kern County approximately 15 miles west of State Route 14 (SR 14); approximately 12 miles south of State Route 58 (SR 58), and eight miles north of State Route 138 (SR 138), as shown in Figure 2-1 in Chapter 2. Primary access to the TWP site would be gained along 170th Street West, north of Rosamond Boulevard. Local access to the TWP site is from 170th Street West and Rosamond Boulevard. Onsite circulation would be provided by existing roads and new, unpaved roads constructed to serve as connectors from existing roadways.

Regional and Local Roadway Facilities

SR 14

Also called the Antelope Valley Freeway in the TWP area, SR 14 is the principal regional access route leading to the TWP site north to south. SR 14 is a two- and four-lane State highway that intersects with SR 58 and SR 138; and connects the Los Angeles Basin and the cities of Lancaster and Palmdale (southeast of the TWP site), and the communities of Mojave and California City (northeast of the TWP site). According to the most recent data published by the California Department of Transportation (Caltrans), the Annual Average Daily Traffic (AADT) on the roadway is about 17,600 vehicles (Caltrans, 2011).

SR 58

This road provides for interregional and interstate travel, and is one of two major east/west thoroughfares through Kern County. SR-58 acts as a major extension of the Interstate System by connection to Interstate 5 (I-5) in Kern County, to and from the Central Valley. Within the vicinity of the TWP area, SR 58 connects regional traffic with SR 14 and provides two lanes in each direction. The AADT along the roadway, according to Caltrans, is about 14,000 vehicles (Caltrans, 2011).

SR 138

SR 138 provides for interregional and interstate travel, and is a two-lane, east-west roadway that extends from SR 14 to the east and I-5 to the west. Within the vicinity of the TWP area, SR 138

connects regional traffic with SR 14 and provides access to 170th Street West. The AADT along the roadway is about 3,750 vehicles (Caltrans, 2011).

Rosamond Boulevard

Rosamond Boulevard serves as an east-west circulation route for the Rosamond and Willow Springs areas, extending from 170th Street West through Edwards Air Force Base where it becomes a north-south roadway before its junction at SR 58. Within the TWP area, the roadway includes one travel lane in each direction with graded shoulders, and a full interchange with SR 14.

Backus Road

Backus Road is an east-west roadway located on the northerly edge of Rosamond with a full interchange connection to SR 14, and a connection to Rosamond Boulevard via Tehachapi-Willow Springs Road. The roadway currently exists as a two-lane roadway with graded shoulders.

Tehachapi-Willow Springs Road / 90th Street West

Tehachapi-Willow Springs Road is a north-south roadway that connects Backus Road with Rosamond Boulevard; its name changes to 90th Street West south of Rosamond Boulevard. The roadway currently exists as a two-lane road with paved shoulders and provides access between the communities of Rosamond and Tehachapi to the northwest, and Mojave to the northeast via Oak Creek Road.

Site Access

Access to the TWP site would be from 170th Street West, and newly constructed roadways would provide direct access to the TWP site and its related facilities. New internal access roads would be constructed along and between the turbine arrays (as shown in Figure 2-2 in Chapter 2). Approximately 10 miles of new roads (each about 36 feet wide) would be constructed for construction and operation of the TWP. No grading activities would be needed to construct the new access roads, but in areas where electrical and fiberoptic lines would be installed, grading activities would occur within 10 feet of either side of the new access roads. These access roads would provide permanent vehicular access to each wind turbine site during the operations, maintenance, and decommissioning phases of the TWP. In addition, speed limits along these roads would be limited to 15 and 25 miles per hour.

Existing Traffic Volumes and Levels of Service

Level of service (LOS) is defined as a qualitative measure describing operational conditions within a traffic stream, generally in terms of such service measures as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. LOS indicators for the highway and roadway system are based on specific characteristics of traffic flow on designated sections of roadway during a typical day.

Several physical and operational characteristics of the roadway, such as lane configuration, flow speed (typical speed between intersections), and number of intersections per mile, are used to

determine the vehicular capacity of the roadway segment. When these two sets of data are compared, a volume-to-capacity (v/c) ratio is calculated. These factors are then converted to a letter grade identifying operating conditions. The 2000 *Highway Capacity Manual* (HCM) methodology provides six levels of operating conditions for roadways and intersections, ranging from LOS A (best operating conditions characterized by free-flow traffic, low volumes, and little or no restrictions on maneuverability) to LOS F (forced traffic flow with high traffic densities, slow travel speeds, and often stop-and-go conditions) (Transportation Research Board, 2000).[1]

For signalized intersections, the HCM methodology incorporates various intersection characteristics (e.g., traffic volumes, lane geometry, and signal phasing/timing) to estimate the average control delay experienced by motorists traveling through an intersection. For unsignalized (all-way stop-controlled and side-street stop-controlled) intersections, the HCM methodology relates LOS to the total delay per vehicle for the intersection as a whole (for all-way stop-controlled intersections), and for each stop-controlled movement or approach only (for side-street stop-controlled intersections). Total delay is defined as the total elapsed time from when a vehicle stops at the end of the queue until the vehicle departs from the stop line. This time includes the time required for a vehicle to travel from the last-in-queue position to the first-in-queue position. Table 3.16-1 presents the relationships between delay and level of service for signalized and unsignalized intersections.

Peak-hour traffic conditions (for the hour of highest traffic volumes during the two-hour peak period) were evaluated at six study intersections, using traffic volumes collected in October 2009 and the 2000 HCM operations methodology. The Synchro software was used as the analysis tool in this study. Existing morning (a.m.) and afternoon (p.m.) peak-hour level of service for each study intersection is presented in Table 3.16 2. During the peak hours, all of the study intersections currently operate at an acceptable LOS (LOS B or better).

Average Daily Traffic (ADT) volumes were obtained from Kern Council of Governments (Kern COG) and Caltrans for roadways in proximity to the TWP site. As stated, roadway segment capacity and level of service (LOS) methodologies were applied to assess existing traffic conditions on study roadway segments. As shown in Table 3.16-3, under existing conditions, all of the study roadway segments are currently operating at acceptable service levels (LOS A).

Public Transportation within the Vicinity of the TWP

Public transportation within the vicinity of the TWP consists of an airport, rail services, bicycle and pedestrian facilities. Information about those forms of public transportation follows.

[1] The Highway Capacity Manual is a common guide used for computing the capacity and quality of service of various highway facilities, including highways, arterial roads, signalized and unsignalized intersections and the effects of mass transit, pedestrians, and bicycles on the performance of these systems.

TABLE 3.16-1
DEFINITIONS FOR INTERSECTION LEVEL OF SERVICE (HCM METHODOLOGY)

Unsignalized Intersections		Level of Service Grade	Signalized Intersections	
Description	**Average Total Vehicle Delay (Seconds)**		**Average Control Vehicle Delay (Seconds)**	**Description**
No delay for stop-controlled approaches.	≤10.0	A	≤10.0	Free Flow or Insignificant Delays: Operations with very low delay, when signal progression is extremely favorable and most vehicles arrive during the green light phase. Most vehicles do not stop at all.
Operations with minor delay.	>10.0 and ≤15.0	B	>10.0 and ≤20.0	Stable Operation or Minimal Delays: Generally occurs with good signal progression and/or short cycle lengths. More vehicles stop than with LOS A, causing higher levels of average delay. An occasional approach phase is fully utilized.
Operations with moderate delays.	>15.0 and ≤25.0	C	>20.0 and ≤35.0	Stable Operation or Acceptable Delays: Higher delays resulting from fair signal progression and/or longer cycle lengths. Drivers begin having to wait through more than one red light. Most drivers feel somewhat restricted.
Operations with increasingly unacceptable delays.	>25.0 and ≤35.0	D	>35.0 and ≤55.0	Approaching Unstable or Tolerable Delays: Influence of congestion becomes more noticeable. Longer delays result from unfavorable signal progression, long cycle lengths, or high volume to capacity ratios. Many vehicles stop. Drivers may have to wait through more than one red light. Queues may develop, but dissipate rapidly, without excessive delays.
Operations with high delays, and long queues.	>35.0 and ≤50.0	E	>55.0 and ≤80.0	Unstable Operation or Significant Delays: Considered to be the limit of acceptable delay. High delays indicate poor signal progression, long cycle lengths and high volume to capacity ratios. Individual cycle failures are frequent occurrences. Vehicles may wait through several signal cycles. Long queues form upstream from intersection.
Operations with extreme congestion, and with very high delays and long queues unacceptable to most drivers.	>50.0	F	>80.0	Forced Flow or Excessive Delays: Occurs with oversaturation when flows exceed the intersection capacity. Represents jammed conditions. Many cycle failures. Queues may block upstream intersections.

SOURCE: Transportation Research Board, Special Report 209, *Highway Capacity Manual*, updated 2000.

TABLE 3.16-2
EXISTING PEAK-HOUR INTERSECTION LEVELS OF SERVICE (LOS)[a]

Intersection	Type	A.M. Peak		P.M. Peak	
		Delay	LOS	Delay	LOS
1. Tehachapi-Willow Springs Road / Backus Road	Stop Sign (Eastbound)	10.1	B	0.0	A
	Stop Sign (Westbound)	8.9	A	9.0	A
2. SR 14 Southbound Ramps / Backus Road	Stop Sign (Southbound)	8.8	A	8.8	A
3. SR 14 Northbound Ramps / Backus Road	Stop Sign (Northbound)	9.0	A	9.0	A
4. 170th Street West / Rosamond Boulevard	Stop Sign (Westbound)	8.5	A	8.6	A
5. 90th Street West / Rosamond Boulevard	Stop Sign (Northbound)	9.4	A	9.8	A
	Stop Sign (Southbound)	9.6	A	9.9	A
6. SR 14 Southbound Off-Ramp / Rosamond Blvd	Traffic Signal	7.2	A	7.0	A
7. SR 14 Northbound On-Ramp / Rosamond Blvd	Traffic Signal	4.7	A	18.7	B

[a] LOS calculations used the *2000 Highway Capacity Manual* operations analysis methodology.

SOURCE: Ruettgers & Schuler, December 2011.

TABLE 3.16-3
EXISTING DAILY ROADWAY SEGMENT VOLUMES AND OPERATIONS

Segment	Existing Capacity[a]	Daily Volume[b]	Volume-to-Capacity	Level of Service
Backus Road				
Tehachapi-Willow Springs Rd to SR 14	15,000	2,515	0.17	A
Rosamond Boulevard				
170th St West to Tehachapi-Willow Springs Rd	15,000	572	0.04	A
Tehachapi-Willow Springs Rd to 35th St West	15,000	4,786	0.33	A
35th St West to SR 14	40,000	19,768	0.51	A
Tehachapi-Willow Springs Rd				
North of Backus Rd	15,000	1,862	0.13	A
Rosamond Blvd to Backus Rd	15,000	4,682	0.32	A
State Route 14				
North of Backus Road	75,000	18,156	0.25	A
Rosamond Blvd to Backus Rd	75,000	18,677	0.25	A

[a] Roadway capacity based on Kern County Classification and represent capacity at LOS C (preferred service level).
[b] Roadway volumes are representing in bi-directional, average daily traffic (ADT).

SOURCES: Ruettgers & Schuler, December 2011.

Skyotee Ranch Airport

The nearest airport facility to the TWP site is the Skyotee Ranch Airport. This airport is a private use facility located approximately four miles southwest of the TWP site and approximately 30 miles northwest of the community of Rosamond. Skyotee Ranch Airport has two operating runways, Runway 7 and Runway 25, which are both unpaved, dirt runways. As stated, the airport is for private-use and permission is required to utilize any aircraft on the two runways (Airnav, 2011).

Rail and Bus Service

There is no regional passenger railroad transportation (e.g., Amtrak) or local bus transportation near the TWP area. Kern Regional Transit provides scheduled bus transit service throughout multiple cities and communities within Kern County; however there are no existing bus routes at or near the TWP site. Currently, the East Kern Express bus route operates eight weekday and three weekend services between several communities, including Bakersfield, Lancaster, Mojave, and Rosamond. Bus frequencies vary between each route during the weekday and weekend periods, and the bus route operates along SR 14 in the Lancaster and Rosamond areas; SR 58 in Mojave, Tehachapi, and Edison, and terminates at the Bakersfield Amtrak Station (Kern Regional Transit, 2011).

Bicycle and Pedestrian Facilities

Bicycle facilities are generally classified as bicycle paths, striped bicycle lanes, or signed bike routes. There are no bicycle facilities adjacent to the TWP site.

Pedestrian facilities include sidewalks, crosswalks, curb ramps, pedestrian signals, and streetscape amenities. The local roadways described above do not include any pedestrian facilities.

3.16.2 Applicable Regulations, Plans, and Standards

Federal

Title 49 Code of Federal Regulations (CFR) Subtitle B, Parts 171-173, 177-178, 350-359, 397.9 and Appendices AG address safety considerations for the transport of goods, materials, and substances and governs the transportation of hazardous materials, including types of materials and marking of the transportation vehicles (U.S. Federal Government, 2011).

BLM California Desert Conservation Area Plan

The Project would be located within the boundaries of the BLM's CDCA. The CDCA, which covers 25 million acres of land, serves as the BLM’s land use guide for management of these public lands. The BLM West Mojave Plan serves as a Habitat Conservation Plan and CDCA Plan amendment (BLM, 2005). On June 30, 2003 the BLM issued a Decision Record that designated a network of motorized vehicle access routes in the western Mojave Desert, and amended the CDCA Plan to include the route network as a component of the CDCA Plan. This decision followed the publication, in March 2003, of an environmental assessment (EA) for the Western Mojave Desert Off Road Vehicle Designation Project (BLM, 2003). The Designation Project EA

assessed the environmental effects of adopting the motorized vehicle access network developed through the West Mojave planning process. Consideration of the access network in advance of the publication of the West Mojave Plan was required to meet a court-mandated deadline for the BLM to issue a decision regarding route designation in the West Mojave Plan area by June 30, 2003.

State

California Department of Transportation (Caltrans)

The use of state highways for other than transportation purposes requires an encroachment permit, Caltrans Form TR-0100. This permit is required for utilities, developers, and non-profit organizations for use of the state highway system to conduct activities other than transportation (e.g., landscape work, utility installation, film production) within the ROW. The application would be forwarded to Caltrans District 8, where the TWP site is located. The Caltrans *Traffic Manual* (Part 5) provides *Traffic Controls for Construction and Maintenance Work Zones* (Caltrans, 2010). Also, any TWP requirement to transport oversize or overweight loads would require approval from Caltrans.

Local

Kern County General Plan

The Kern County General Plan contains goals, policies and implementation measures that would be relevant to the TWP. The Circulation Element of the General Plan includes strategies and principles as they aim to enhance compatibility between land use, infrastructure, and transportation modes (Kern County, 2009). Relevant objectives, goals, policies, and implementation measures to the TWP are discussed below.

Objectives

Goal 4. Kern County will plan for a reduction of environmental effects without accepting a lower quality of life in the process.

Goal 5. Maintain a minimum LOS D for all roads throughout the County.

Section 2.3.3 Highway Plan

Goals

Goal 1. To carry out this plan in a manner consistent with needs and standards of the County.

Goal 3. This plan sets up a simple way for protecting road ROW. Protecting corridors for future transportation facilities is the most important transportation planning activity in any high growth area.

Goal 4. To reserve ROW to meet future road needs that result from development allowed by land use plans.

Goal 5. Maintain a minimum LOS D.

Policies

Policy 1. Development of roads within the County shall be in accordance with the Circulation Diagram Map. The charted roads are usually on section and midsection lines. This is because the road centerline can be determined by an existing survey.

Policy 2. This plan requires, as a minimum, construction of local road widths in areas where the traffic model estimates little growth through and beyond year 2010. Where Planning Department's growth estimates indicate more than a local road is required, expanded facilities shall be provided. The timing and scope of required facilities should be set up and implemented through the Kern County Land Division Ordinance. However, the County shall routinely protect all surveyed section lines in the Valley and Desert Regions for arterial ROW. The County shall routinely protect all mid-section lines for collector highways in the same regions. The only possible exceptions shall be where the County adopts special studies and where Map Code 4.1 (Accepted County Plan) areas occur. In the Mountain Region where terrain does not allow construction on surveyed section and mid-section lines, ROW width shall be the size shown on the diagram map. No surveyed section and mid-section "grid" will comprehensively apply to the Mountain Region.

Policy 3. This plan's road width standards are listed below. These standards do not include State highway widths that would require additional ROW for rail transit, bike lanes and other modes of transportation. Kern County shall consider these modifications on a case-by-case basis.

- Expressway [Four Travel Lanes] Minimum 110 foot ROW
- Arterial [Major Highway] Minimum 110-foot ROW (County Standard 110 feet);
- Collector [Secondary Highway] Minimum 90-foot ROW (County Standard 90 feet);
- Commercial-Industrial Street Minimum 60-foot ROW (County Standard 60 feet);
- Local Street [Select Local Road] Minimum 60-foot ROW; (County Standard 60 feet).

Implementation Measure

Implementation Measure A. The Planning Department shall carry out the road network Policies by using the Kern County Land Division Ordinance and Zoning Ordinance, which implements the Kern County Development Standards that includes road standards related to urban and rural planning requirements. These ordinances also regulate access points. Planning Department can help developers and property owners in identifying where planned circulation is to occur.

Section 2.3.4 Future Growth

Policies

Policy 2. The County should monitor development applications as they relate to traffic estimates developed for this plan. Mitigation is required if development causes affected roadways to fall below LOS D. Utilization of the California Environmental Quality Act (CEQA) process would help identify alternatives to or mitigation for such developments. Mitigation could involve amending the Land Use, Open Space, and Conservation Element to establish jobs/housing balance if projected trips in any traffic zone exceed trips identified for this Circulation Element. Mitigation could involve exactions to build off-site transportation facilities. These enhancements would reduce traffic congestion to an acceptable level.

Policy 4. As a condition of private development approval, developers shall build roads needed to access the existing road network. Developers shall build these roads to County standards unless improvements along State routes are necessary then roads shall be built to Caltrans standards. Developers shall locate these roads (width to be determined by the Circulation Plan) along centerlines shown on the circulation diagram map unless otherwise authorized by an approved Specific Plan Line. Developers may build local roads along lines other than those on the circulation diagram map. Developers would negotiate necessary easements to allow this.

Policy 5. When there is a legal lot of record, improvement of access to county, city or State roads will require funding by sources other than the County. Funding could be by starting a local benefit assessment district or, depending on the size of a project, direct development impact fees.

Policy 6. The County may accept a developer's road into the County's maintained road system. This is at Kern County's discretion. Acceptance would occur after the developer follows the above requirements.

Implementation Measures

Implementation Measure A. The County should relate traffic levels to road capacity and development levels. To accomplish this Roads Department and Planning Department should set up a monitoring program. The program would identify traffic volume to capacity ratios and resulting level of service. The geographic base of the program would be traffic zones set up by Kern Council of Governments.

Implementation Measure C. Project development shall comply with the requirements of the Kern County Zoning Ordinance, Land Division Ordinance, and Development Standards.

3.17 Vegetation Resources

This section provides an overview of the existing vegetation resources in the TWP area, including vegetation communities, invasive and noxious weeds, special-status plant species, and state and federal jurisdictional waters areas. For the purpose of this section, the "Project area" is defined as the total area for which the Applicant has requested an 1,207-acre ROW grant. The action area is defined by regulation as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR §402.02). The study area for vegetation resources includes the approximately 1,207 acres of public lands administered by the BLM within which vegetation communities and special-status plant distribution were characterized (Sapphos, 2011a and Sapphos, 2014).

This discussion is based, in part, upon information gathered from the following sources:

- The Biological Resources Technical Report (BRTR) for the Tylerhorse Wind Energy Project (Sapphos, 2011a) (Appendix C-1);
- Tylerhorse Wind Energy Project. Addendum to the Biological Resources Technical Report for the Tylerhorse Wind Energy Project (Sapphos, 2013) (Appendix C-2).
- Tylerhorse Wind Energy Project. Addendum No. 2 to the Biological Resources Technical Report for the Tylerhorse Wind Energy Project (Sapphos, 2014) (Appendix C-3).
- The Biological Assessment prepared for the Tylerhorse Wind Energy Project (Sapphos, 2011b);
- A list of threatened, endangered, and candidate species from the U.S. Fish and Wildlife Service (USFWS, 2013);
- The BLM West Mojave Plan (WEMO) (BLM, 2005);
- The California Natural Diversity Database (CDFW, 2013); and
- The California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants (CNPS, 2013).

3.17.1 Environmental Setting

Natural Communities

The Project area is located within the western Mojave Desert region of the desert floristic province. This region mixes an array of geographic substrates, topographic features, climatic regimes, soil types, and other physical factors, which have combined to produce a mosaic of floristic components and associated natural habitats. Mojave Desert vegetation is dominated by

low, widely spaced shrubs. The species composition of the Mojave Desert has common elements with the Great Basin to the north and many succulent species common to the Sonoran Desert to the south and east.

The Project area contains five distinct, primary plant communities: 1) Joshua Tree Woodland, 2) Mojave Desert Wash Scrub, 3) Mojavean Juniper Woodland and Scrub, 4) Mojave Mixed Woody Scrub, and 5) Non-Native Grassland, as characterized using the Sawyer et al. classification system (1995). Of these communities, Mojavean juniper woodland and scrub is the predominant association at approximately 567 acres (47 percent), followed by Mojave mixed woody scrub at 278 acres (23 percent), non-native grassland at roughly 205 acres (17 percent), Joshua tree woodland at 96 acres (8 percent), and Mojave desert wash scrub at 36 acres (3 percent) (Table 3.17-1) (Sapphos, 2011a). An additional 25 acres (2 percent) of lands are classified as "Disturbed" to account for impacted areas where minimal to no native vegetation is present.

The five major plant community types identified within the Project area are described further below. The description of plant communities follows the classification system provided in *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland, 1986), cross-referenced to vegetation series described in *A Manual of California Vegetation* (Sawyer, 1995).

TABLE 3.17-1
PLANT COMMUNITIES WITHIN THE PROJECT AREA

Plant Community	Status	Area (acres)
Mojave Desert Wash Scrub	G3, S3.2	36
Joshua Tree Woodland	G4, S2.2	96
Mojavean Juniper Woodland and Scrub	G4, S4	567
Mojave Mixed Woody Scrub	G3, S3.2	278
Non-native Grassland	N/A	205
Disturbed	NA	25
	Total:	**1,207**

SOURCE: Sapphos, 2014

Joshua Tree Woodland

The Joshua tree woodland plant community typically includes Joshua tree (*Yucca brevifolia*) as the only arborescent species, with a diverse shrub layer. It occurs on sandy, loamy, or gravelly alluvial slopes. Joshua tree woodland generally occurs at elevations between 2,500 and 5,000 feet above mean sea level (MSL) and is recorded from the Mojave Desert and the desert slopes of the Tehachapi, Sierra Nevada, and Transverse mountain ranges of California. The Joshua tree woodland plant community is a CDFW-recognized sensitive plant community.

Joshua tree woodland occupies approximately 96 acres of the Project area (Table 3.17-1; Figure 3.17-1). Within the Project area, this community occurs within alluvial terraces and bajadas associated within the Tylerhorse Canyon drainage. It is characterized by regular to dense stands of Joshua trees reaching between 10 and 25 feet in height. Understory species in this plant community include nonnative annual species, creosote bush (*Larrea tridentata*), California buckwheat (*Eriogonum fasciculatum*), boxthorn (*Lycium* spp.), desert needle grass (*Achnatherum speciosum*), cholla (*Opuntia* sp.), desert tea (*Ephedra californica*), and Nevada ephedra (*Ephedra fasciculata*) (Sapphos, 2011a). Within the Project area, Joshua tree woodland intergrades with Mojave Desert wash scrub, Mojavean juniper woodland and scrub, and non-native grassland communities.

Mojave Desert Wash Scrub

Mojave Desert wash scrub is characterized by a diversity of desert shrub species in sandy arroyos and washes throughout the Mojave Desert, with typical species that include catclaw acacia (*Senegalia* [=*Acacia*] *greggii*), desert willow (*Chilopsis linearia*), and desert tea (*Ephedra californica*) among others. Mojave Desert wash scrub occupies approximately 36 acres of the Project area (Table 3.17-1; Figure 3.17-1). Within the Project area, Mojave Desert wash scrub occurs in dry washes and is characterized by stands of scalebroom (*Lepidospartum squarrosum*), mulefat (*Baccharis salicifolia*), rabbitbrush (*Chrysothamnus* spp. and *Ericameria* spp.), and several *Ephedra* species (Sapphos, 2011a). This vegetation community corresponds in part to the scalebroom series and mulefat series described by Sawyer (1995).

Mojavean Juniper Woodland and Scrub

Mojavean juniper woodland and scrub is typically characterized by open woodland dominated by California juniper (*Juniperus californica*) with an understory of diverse Mojave mixed scrub and steppe species. This vegetation type typically occurs at elevations of 4,000 to 6,000 feet above MSL in Southern California, where it is known to occur in the southern Sierra Nevada and Tehachapi Mountains and the Mojave Desert. Mojavean juniper woodland and scrub occupies approximately 567 acres of the Project area (Table 3.17-1; Figure 3.17-1). Within the Project area, this plant community is generally characterized by sparse to dense California juniper stands and occasional Joshua trees. Species in the understory include typical Mojave mixed scrub and steppe species such as rubber rabbitbrush (*Ericameria nauseosus*), cheesebush (*Ambrosia salsola*), desert needle grass, narrow leaf goldenbush (*Ericameria linearifolia*), ephedra, Bigelow's tickseed (*Coreopsis bigelovii*), and California buckwheat. Nonnative annual grasses, including foxtail brome (*Bromus madritensis*) and cheatgrass (*Bromus tectorum*), are common throughout this vegetation type within the Project area (Sapphos, 2011a). Mojavean juniper woodland and scrub corresponds in part to the California juniper series described by Sawyer (1995).

Mojave Mixed Woody Scrub

Mojave mixed woody scrub is a diverse, open scrub community typically characterized by California buckwheat and Joshua tree on shallow soils with low water-holding capacity. This

type of vegetation typically occurs at elevations between 2,000 and 5,000 feet above MSL and is known from the eastern base of the Sierra Nevada Mountains and the Tehachapi, San Gabriel, San Bernardino, and San Jacinto Mountain ranges.

Mojave mixed woody scrub occupies approximately 278 acres of the Project area (Table 3.17-1; Figure 3.17-1). Within the Project area this vegetation type is characterized by a shrub layer containing narrowleaf goldenbush, California buckwheat, yellow rabbitbrush (*Chrysothamnus viscidiflorus*), cheesebush, Cooper's boxthorn, winterfat (*Krascheninnikovia lanata*), Nevada ephedra, California ephedra, and several species of annual buckwheat (*Eriogonum* spp.). Openings among the shrubs are dominated by non-native species that include cheatgrass and filaree along with native forbs including fiddleneck, California goldfields (*Lasthenia californica*), and *Phacelia* spp. with occasional clumps of desert needlegrass. Widely scattered Joshua trees with a 5 to 15 percent cover are present throughout this plant community (Sapphos, 2011a). Within the Project area, this vegetation type intergrades with Mojavean juniper woodland and scrub, Joshua tree woodland, and Mojave Desert wash scrub.

Non-Native Grassland

Non-native grassland is characterized by sparse to dense cover of annual grasses, often on clay soils. This community generally occurs at elevations below 4,000 feet in the Tehachapi Mountains. Non-native grassland occupies approximately 205 acres of the Project area. This vegetation type is characterized by dense to sparse cover of foxtail brome and cheatgrass, with occasional native melic (*Melica* spp.), widely scattered shrubs such as rubber rabbitbrush, cheesebush, and annuals such as red-stemmed filaree (*Erodium cicutarium*) and California goldfields throughout (Sapphos, 2011a).

Invasive and Noxious Weeds

Noxious weeds are species of non-native plants included on the weed lists of the California Department of Food and Agriculture (CDFA), the California Invasive Plant Council (Cal-IPC), or those weeds of special concern identified by the BLM under the Federal Noxious Weed Act of 1974 (7 USC 28909). Weeds that are not indigenous to the region and likely to be detrimental, destructive, and difficult to control or eradicate may be listed as noxious weeds by state or federal agencies. Noxious weeds can compete with native vegetation for water and nutrients in areas of disturbance and can spread quickly in a short time span.

Nine species of noxious and/or invasive, nonnative plant species were observed during botanical surveys conducted in the Project area. Noxious and/or invasive plants included tumble mustard (*Sisymbrium altissimum*), lamb's quarters (*Chenopodium album*), red-stemmed filaree (*Erodium cicutarium*), wild oats (*Avena fatua*), horehound (*Marrubium vulgare*), ripgut brome (*Bromus diandrus*), foxtail brome, cheatgrass, and Chilean chess (*Bromus trinii*) (Sapphos, 2011a).

Jurisdictional Wetlands

The determination of presence or absence of federally protected wetlands in the Project area, as defined in Section 404 of the Clean Water Act, conformed to the protocols specified in the *Corps of Engineers Wetlands Delineation Manual*, as modified by the U.S. Supreme Court case, *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers*, No. 99-1178 (January 9, 2001). As cited in the BRTR, the determination regarding the potential presence or absence of federally protected wetlands included review of topographic maps and National Wetlands Inventory (NWI) maps, interpretation of aerial photographs, spatial analysis using geographic information system (GIS), plant community mapping, field analysis, and coordination with the U.S. Army Corps of Engineers (USACE) (Sapphos, 2011a). The Project area is located in an isolated inland basin; therefore, the legal ruling in the Supreme Court decision of the *Solid Waste Agency*[1] was taken into consideration.

Sapphos performed a jurisdictional delineation of the Project area in 2006. The analysis relied upon topographic maps, NWI maps, aerial photographs, and field investigations of onsite and upstream and downstream resources. Based on this review, all of the 4.6 miles of blueline drainages mapped by the U.S. Geological Survey on the TWP site were determined to be non-navigable, isolated, and intrastate drainages (Sapphos, 2011a). A total of two named blueline drainages (Gamble Springs Canyon and Tylerhorse Canyon) and six additional unnamed drainages cross the Project area. Each is a non-navigable and isolated drainage that does not connect to any navigable waterway subject to the jurisdiction of USACE pursuant to Section 404 of the Clean Water Act. As a result of field investigations, it was determined that no federally jurisdictional wetland features and no NWI wetlands occur in the Project area.

The nearest wetland identified from the NWI is located approximately 1.3 miles to the northwest of the Project area. The proposed Project was designed to avoid all mapped NWI wetlands. In 2006, the USACE concurred with the Applicant's determination that development of the proposed Project would not affect any area protected pursuant to Section 404 of the Clean Water Act (USACE, 2006).

State Jurisdictional Areas

In 2006, Sapphos performed an analysis to determine the presence and distribution of areas potentially requiring negotiation of a Stream and Lakebed Alteration Agreement with the California Department of Fish and Wildlife (CDFW) pursuant to §1600 of Fish and Game Code.

---

[1] The Solid Waste Agency of Northern Cook County (SWANCC) decision limited USACOE jurisdiction of non-navigable, isolated, and intrastate waters. In this decision, the Supreme Court struck down the Migratory Bird Rule, ruling that the USACOE did not have authority under Section 404 over the isolated wetlands on SWANCC's property based on their use as habitat by migratory birds. However, the Supreme Court did not strike down any of the regulations implementing Section 404 or alter the definition of "waters of the United States." Rather, the Supreme Court concluded that the USACOE could regulate isolated wetlands only if the wetlands had some connection to interstate commerce other than their use by migratory birds.

The Project was subsequently designed to avoid all drainages and will not impact any areas potentially subject to the jurisdiction of CDFW under §1600. Based on the above analysis, no effects are anticipated to CDFW jurisdictional drainages. If changes to the Proposed Action necessitate modification to one or more blueline drainages, for example to accommodate underground electrical lines, a Stream and Lakebed Alteration Agreement may be required pursuant to §1600 of the Fish and Game Code by CDFW.

Special Status Plants

Special-status plants are those species that have been afforded special recognition by federal, state, or local resource agencies or organizations. Listed and special-status species are of relatively limited distribution and typically require unique habitat conditions. Special-status species are defined as meeting one or more of the following criteria:

- Listed as threatened or endangered or candidates for future listing as threatened or endangered under the federal Endangered Species Act (FESA); and/or
- BLM Sensitive Species[2]; and/or
- Considered a locally significant species, that is, a species that is not rare from a statewide perspective but is rare or uncommon in a local context such as within a county or region or is so designated in local or regional plans, policies, or ordinances.

The Project area is located in an area that provides potentially suitable habitat for special-status plant species. The protocol for the sensitive plant surveys on the Project study area followed the 2000 California Department of Fish and Game[3] (2000) guidelines, which suggest using systematic field techniques in all habitats on the study area to provide thorough coverage of potential impact areas. Surveys were also compatible with requirements for special-status plants surveys in accordance with BLM (2009) guidelines.

Within the 1,207 acre Project area, an initial 319-acre area was surveyed for special-status plant species in spring and summer 2010, and spring 2012 focusing on areas that would be directly affected by the Project. These focused surveys were performed on October 6, 8, and 25, 2010, May 4, 5, and 7, 2010, and April 10, 11, 12 and 18, 19, 20, 2012 by Sapphos biologists. Furthermore, botanical surveys of the full 1,207-acre Project area were performed on October 28 and 31, 2011 (Sapphos, 2011a). In April 2012, a special-status plant survey was conducted to

---

2 BLM designates "Sensitive" species as those requiring special management considerations to promote their conservation and reduce the likelihood and need for future listing under FESA. BLM Sensitive species include all Federal Candidate and Federally Delisted species which were so designated within the last five years, and CNPS List 1B species that occur on BLM lands. For the purposes of this document, all BLM Sensitive species included as special-status species.

3 On January 1, 2013 the California Department of Fish and Game (CDFG) formally changed its name to the California Department of Fish and Wildlife (CDFW).

determine potential presence of spring-blooming special-status plants on the Project (Sapphos, 2013).

As a result of these surveys, all portions of the action area were thoroughly surveyed to properly inventory and document the presence of special-status plants. Special attention was given to those areas supporting areas with high potential to support special-status plant species such as riparian areas and areas with calcareous soils. All plants encountered during the surveys were identified to the highest taxonomic level necessary for a rare plant determination (Sapphos, 2011a; 2013).

No special-status plant species were documented within or near the Project area during 2010, 2011, and 2012 surveys (Sapphos 2011a; 2013). Table 3.17-2 lists the special-status species that were surveyed for.

3.17.2 Applicable Regulations, Plans, and Standards

Federal

NEPA

The NEPA (42 U.S.C. 4321 et seq.) directs "a systematic, interdisciplinary approach" to planning and decision-making and requires environmental statements for "major Federal actions significantly affecting the quality of the human environment." Implementing regulations by the Council on Environmental Quality (CEQ) (40 CFR Parts 1500-1508) requires federal agencies to identify and assess reasonable alternatives to proposed actions that will restore and enhance the quality of the human environmental 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. The BLM is the Lead Agency under NEPA for the Proposed Action.

Federal Endangered Species Act

The federal Endangered Species Act (ESA) and subsequent amendments designate threatened and endangered animals and plants and provide measures for their protection and recovery. "Take" of listed animal species and of listed plant species is prohibited without obtaining a federal permit. Take is defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct." Harm includes any act that actually kills or injures fish or wildlife, including significant habitat modification or degradation that significantly impairs essential behavioral patterns of fish or wildlife. Activities that damage (i.e., harm) the habitat of listed wildlife species require approval from the USFWS for terrestrial species. The ESA also generally requires delineation of critical habitat for listed species. If critical habitat has been designated, impacts to areas that contain the primary constituent elements identified for the species, whether or not it is currently present, are also prohibited.

TABLE 3.17-2
SPECIAL-STATUS PLANT SPECIES WITH POTENTIAL TO OCCUR IN THE PROJECT AREA

Species	Status Federal/State/ BLM/CNPS[a]	Habitat	Potential Occurrence in the Project Area
Darwin rock-cress *Arabis pulchra* var. *munciensis*	—/—/BLM/ CNPS 1B.1	Chenopod and Mojavean scrub, in carbonate soil; at elevations of 1,100–2,075 meters above MSL; perennial herb in the Brassicaceae that blooms in April	Low: Habitat not present
Horn's milk-vetch *Astragalus hornii* var. *hornii*	—/—/BLM/ CNPS 1B.1	Alkali regions at lake beds margins, meadows and seeps, and playas; at elevations 60–850 meters above MSL; annual herb in the Fabaceae family that blooms from May to October.	Low: Habitat not present
Round-leaved filaree *California macrophylla*	—/—/BLM/ CNPS 1B.1	Cismontane woodland, valley and foothill grassland; at elevations 15–1,200 above MSL; annual herb in the Geraniaceae family that blooms from March to May	Low: Habitat not present
Palmer's mariposa lily *Calochortus palmeri* var. *palmeri*	—/—/—/ CNPS 1B.2	Chaparral, lower montane coniferous forest, meadows and seeps; in mesic areas; at elevations 1,000–2,390 meters above MSL; bulbiferous herb in the Liliaceae family that blooms from April to July	Low: Habitat not present
Clokey's cryptantha *Cryptantha clokeyi*	—/—/BLM/ CNPS 1B.2	Mojavean desert scrub; at elevations 2,620–4,200 feet (800–1,280 m) above MSL; annual herb in the Boraginaceae family that blooms in April.	**Mod.-High:** Habitat (Mojavean Desert Scrub) present; not detected during surveys
Tracy's eriastrum *Eriastrum tracyi*	—/SR/BLM/ CNPS 1B.2	Chaparral and cismontane woodlands; at elevations of 315–1,125 meters above MSL; annual herb in the Polemoniaceae family that blooms from June to July	Low: Habitat not present
Coulter's goldfields *Lasthenia glabrata* ssp. *Coulteri*	—/—/BLM/ CNPS 1B.1	Coastal salt marshes and swamps, playas, and vernal pools; at elevations 1–120 meters above MSL; annual herb in the Asteraceae family that blooms from February to June	Low: Habitat not present

TABLE 3.17-2 (CONTINUED)
SPECIAL-STATUS PLANT SPECIES WITH POTENTIAL TO OCCUR IN THE PROJECT AREA

Species	Status Federal/State/ BLM/CNPS[a]	Habitat	Potential Occurrence in the Project Area
Pale-yellow layia *Layia heterotricha*	—/—/BLM/ CNPS 1B.1	Cismontane woodland, coastal scrub, pinyon and juniper woodland, valley and foothill grasslands; in alkaline or clay or clay substrates; at elevations 300–1,705 meters above MSL; annual herb in the Asteraceae family that blooms from March to June	Low: Habitat not present
Madera leptosiphon *Leptosiphon serrulatus*	—/—/—/ CNPS 1B.2	Cismontane woodland, lower montane coniferous forest; at elevations 300–1,300 meters above MSL; annual herb in the Polemoniaceae family that blooms from April to May	Low: Habitat not present
Calico monkeyflower *Mimulus pictus*	—/—/BLM/ CNPS 1B.2	Broadleafed upland forest, cismontane woodland, on granitic and disturbed substrates; at elevations 100– 1,300 meters above MSL; annual herb in the Phymaceae family that blooms from March to May	Low: Habitat not present
Tehachapi monardella *Monardella linoides* ssp. *Oblonga*	—/—/BLM/ CNPS 1B.3	Lower montane coniferous forest, pinyon and juniper woodland, upper montane coniferous forest; at elevations from 900–2,470 meters above MSL; rhizomatous herb in the Lamiaceae family that blooms from June through August	Low: Habitat not present
Baja navarettia *Navarretia peninsularis*	—/—/—/ CNPS 1B.2	Openings within chaparral, lower montane coniferous forest, meadows and seeps, mesic areas within pinyon and juniper woodland; at elevations 1,500–2,300 meters above MSL; annual herb in the Polemoniaceae family that blooms from June to August	Low: Habitat not present
Bakersfield cactus *Opuntia basilaris* var. *treleasei*	FE/SE/BLM/ CNPS 1B.1	Chenopod scrub, cismontane woodland, or valley and foothill grassland on sandy or gravelly substrates; at elevations 120–1,140 meters above MSL; perennial stem succulent that blooms April through May.	Low: Habitat not present

TABLE 3.17-2 (CONTINUED)
SPECIAL-STATUS PLANT SPECIES WITH POTENTIAL TO OCCUR IN THE PROJECT AREA

[a] **Status Codes**:
Federal
FE = Federally listed, endangered: species in danger of extinction throughout a significant portion of its range
FT = Federally listed, threatened: species likely to become endangered within the foreseeable future
BLM = BLM Sensitive (Species that require special management consideration to avoid potential future listing under the FESA and that have been identified in accordance with procedures set forth in BLM Manual section 6840 (BLM, 2008)
Note that no plants that occur in the Project area are identified as Sensitive in the West Mojave Plan

State
SE = State listed as endangered
ST = State listed as threatened
R = State characterized as rare

California Native Plant Society
List 1A = Includes plants that are both presumed extinct in California, as well as those plants which are presumed extirpated in California
List 1B = Rare, threatened, or endangered in California and elsewhere
List 2 = Rare, threatened, or endangered in California but more common elsewhere
List 3 = Plants which need more information
List 4 = Limited distribution – a watch list
0.1 = Seriously threatened in California (high degree/immediacy of threat)
0.2 = Fairly threatened in California (moderate degree/immediacy of threat)
0.3 = Not very threatened in California (low degree/immediacy of threats or no current threats known)

Sources: Sapphos, 2011a; CDFW, 2013

For projects proposed on federal lands, federal agencies such as the BLM are required by the FESA to ensure that any action they authorize, implement, or fund, including energy developments, will not jeopardize the continued existence of any federally threatened or endangered species or destroy or adversely modify designated critical habitat. Under FESA Section 7 consultation, the lead agency (e.g., BLM) prepares a Biological Assessment (BA) that analyzes whether the project is likely to adversely affect listed wildlife or plant species or their critical habitat, and proposes suitable avoidance, minimization, or compensatory mitigation measures. If the action would adversely affect the species, the USFWS then responds to the BA by issuing its Biological Opinion (BO) determining whether the project is likely to jeopardize the species or result in adverse modification of critical habitat.

If a “non-jeopardy” or “no adverse modification” opinion is provided by the USFWS, the federal agency may proceed with the action as proposed. If a jeopardy or adverse modification opinion is provided, the USFWS may prepare a BO with reasonable and prudent measures to minimize take and associated mandatory terms and conditions that describe the methods for accomplishing these prudent measures and/or also develop mandatory reasonable and prudent alternatives to the proposed action.

BLM Sensitive Species

BLM Sensitive Species are species designated by the State Director that are not already federal listed proposed, or candidate species, or state listed because of potential endangerment. The 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 a list of special status 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.

BLM California Desert Conservation Area Plan

The CDCA Plan of 1980 covers approximately 25 million acres of land in southern and southeastern California, with approximately 10 million acres being administered by the BLM. The CDCA Plan is a comprehensive, long-range plan with goals and specific actions for the management, use, development, and protection of the resources and public lands within the CDCA and is based on the concepts of multiple use, sustained yield, and maintenance of environmental quality.

The multiple use classes comprise the backbone of the CDCA Plan, essentially zoning the CDCA into four major use categories. The CDCA Plan categories include approximately four million acres of Class C (controlled) lands (including roughly 3,600,000 acres of wilderness areas created under the 1994 California Desert Protection Act) to be preserved in a natural state with access generally limited to non-motorized, non-mechanized means; approximately four million acres of Class L (limited use) lands, providing for generally lower intensity, carefully controlled uses that do not significantly diminish resource values; approximately 1.5 million acres of Class M (moderate use) lands designated for mining, livestock grazing, recreation, energy, and utility development with mitigation required for any damage caused by permitted uses; and approximately 500,000 acres of Class I (intensive use) lands managed for concentrated uses with reasonable protection provided for sensitive natural values and mitigation of impacts and rehabilitation of impacted areas occurring when possible (BLM, 1999).

The CDCA Plan's goals and actions for each resource are established in its 12 elements including the Vegetation Element and the Energy Production and Utility Corridors Element, among several others (BLM, 1999). There have been amendments to the 1980 Plan, including the West Mojave Plan (WEMO). The Proposed Action falls within the planning boundaries of the WEMO, which is described below.

BLM West Mojave Plan

The WEMO began as a Habitat Conservation Plan pursuant to the federal ESA and an approved amendment to the CDCA Plan covering over 9 million acres in five counties with the purpose of creating a comprehensive strategy to conserve and protect the desert tortoise, the Mohave ground squirrel, and nearly 100 other sensitive species, as well as the natural communities in which they reside. The approximately 9,359,000-acre planning area includes approximately 3,264,000 acres of BLM-administered public lands; 3,029,000 acres of private lands; and 102,200 acres of lands administered by the State of California within portions of Inyo, Kern, Los Angeles, and San Bernardino counties.

In March 2006 the BLM issued a Record of Decision (ROD) for the WEMO Final Environmental Impact Statement (BLM, 2006). However, the ROD addressed only the BLM's amendment to the CDCA Plan, and it did not include actions proposed by state and local governments for non-

federal lands. The HCP has not been completed and would require greater specificity for local governments to obtain incidental take permits under the state and federal ESAs.

The WEMO area in Kern County begins at the intersection of Kern, Inyo, and San Bernardino Counties northeast of Ridgecrest, California. The area follows the Sierra Nevada Mountain Range to the southwest and continues to the Tehachapi Mountains and then to the Los Angeles County line east-northeast of Quail Lake. The Proposed Action falls within the boundaries of the WEMO; however, private lands within the Project area are currently not subject to the WEMO as it has not yet been adopted for lands not administered by the BLM. However, BLM lands within the Project area are subject to the provisions of the WEMO as an amendment to the CDCA Plan.

Clean Water Act

The CWA (33 U.S.C. 1251 et seq.) is intended to restore and maintain the quality and biological integrity of the nation's waters. It prohibits the discharge of pollutants into WUS without a National Pollutant Discharge Elimination System (NPDES) permit from the Environmental Protection Agency (EPA). By issuing NPDES permits, the EPA can regulate the discharge of pollutants to protect water quality.

Section 404 of the CWA provides that whenever any person discharges dredged or fill material into waters of the U.S. (e.g., streams, wetlands, lakes, bays) a permit is required from the USACE. Depending on the level of impact, projects qualifying for Nationwide Permit (NWP) may be required to provide the USACE with Pre-Construction Notification of the impacts and meet other restrictions. Projects with greater wetland impacts than those allowed under one of the NWPs require an Individual Permit. In *SWANCC vs. ACOE*, the Supreme Court ruled that the jurisdiction of the USACE does not extend to isolated, intrastate, non-navigable waters and wetlands, such as vernal pools, ephemeral streams, and wetlands not associated with a stream channel.

Section 401 of the CWA requires that an applicant for a federal license or permit to discharge into navigable waters must provide the federal agency with a water quality certification, declaring that the discharge would comply with water quality standards requirements of the CWA. USACE issuance of a Section 404 permit triggers the requirement that a Section 401 certification also be obtained. In California, the RWQCBs issues this certification.

Executive Order 13112 – Invasive Species

Executive Order 13112 was signed in February 1999 and established the National Invasive Species Council. This Order requires agencies to prevent the introduction of invasive species; to provide for their control; and to minimize the economic, ecological, and human health impacts that invasive species cause to the extent practicable and permitted by law.

Federal Noxious Weed Act of 1974, as amended

This Act established a federal program to control the spread of noxious weeds. The Secretary of Agriculture is authorized to designate plants as noxious weeds. The movement of all such weeds in interstate or foreign commerce is prohibited except under permit.

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 1199 – Protection of Wetlands

This order establishes a national policy to avoid adverse impacts on wetlands whenever there is a practicable alternative.

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

California Endangered Species Act

The California ESA establishes the policy of the state to conserve, protect, restore, and enhance threatened or endangered species and their habitats. Unlike the federal ESA, state-listed plants have the same degree of protection as wildlife, but insects and other invertebrates may not be listed. Take is defined similarly to the federal ESA, and is prohibited for both listed and candidate species. Take authorization may be obtained by a project proponent from CDFW under California Fish and Game Code 2081. Pursuant to Section 2081 of the California Fish and Game Code, CDFW may authorize individuals or public agencies to import, export, take, or possess state-listed endangered, threatened, or candidate species. These otherwise prohibited acts may be authorized through permits or a Memorandum of Understanding (MOU) if: (1) the take is incidental to an otherwise lawful activity, (2) impacts of the authorized take are minimized and fully mitigated, (3) the permit is consistent with any regulations adopted pursuant to any recovery plan for the species, and (4) the project proponent ensures adequate funding to implement the measures required by CDFW. CDFW makes this determination based on available scientific information and considers the ability of the species to survive and reproduce.

California Native Plant Protection Act

The California Native Plant Protection Act (NPPA) of 1977 directed the CDFW to carry out the Legislature's intent to "preserve, protect and enhance rare and endangered plants in this state." The NPPA gave the California Fish and Game Commission the power to designate native plants as "endangered" or "rare" and protect endangered and rare plants from take. The California Endangered Species Act of 1984 expanded on the original NPPA and enhanced legal protection for plants, but the NPPA remains part of the Fish and Game Code. To align with federal regulations, California ESA created the categories of "threatened" and "endangered" species. It converted all "rare" animals into the Act as threatened species, but did not do so for rare plants. Thus, there are three listing categories for plants in California: rare, threatened, and endangered. Because rare plants are not included in California ESA, mitigation measures for impacts to rare plants are specified in a formal agreement between CDFW and the project proponent.

California Desert Native Plants Act

The California Desert Native Plants Act (CDNPA) 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 (now Ruscaceae), and yuccas); all species of the family Cactaceae; all species of the family Fouquieriaceae (ocotillo); all species of the genus *Prosopis* (mesquites) and the genus *Parkinsonia* (palo verdes); catclaw acacia (*Acacia greggii*); desert holly (*Atriplex hymenelytra*); smoke tree (*Psorothamnus spinosus*); 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 CDNPA was taken into consideration in this evaluation due to the presence of Joshua trees and other covered species in the project area and to provide guidance to the project proponent with regard to the removal and potential salvage of these species in support of the project.

Porter-Cologne Act

The intent of the Porter-Cologne Act is to protect water quality and the beneficial uses of water, and applies to both surface and groundwater. Under this law, the California State Water Resources Control Board develops statewide water quality plans, and the RWQCBs develop basin plans that identify beneficial uses, water quality objectives, and implementation plans. The RWQCBs have the primary responsibility to implement the provisions of both statewide and basin plans. Waters regulated under Porter-Cologne include isolated waters that are no longer regulated by USACE. Developments which impact jurisdictional waters must demonstrate compliance with the goals of the Act by developing Storm Water Pollution Prevention Plans,

Standard Urban Storm Water Mitigation Plans, and other measures in order to obtain a CWA Section 401 certification.

Lake and Streambed Alteration Program

Under Sections 1600 through 1616 of the California State Fish and Game Code, a project proponent is required to notify CDFW prior to commencement of any activity that would substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank (which may include associated riparian resources) of a river, stream or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake. Pursuant to the California State Fish and Game Code, a "stream" is defined as a body of water that flows at least periodically, or intermittently, through a bed or channel having banks and supporting fish or other aquatic life. Based on this definition, a watercourse with surface or subsurface flows that supports or has supported riparian vegetation is a stream and is subject to CDFW jurisdiction. Altered or artificial drainages valuable to fish and wildlife are also subject to CDFW jurisdiction. CDFW also has jurisdiction over dry washes that carry water ephemerally during storm events.

Preliminary notification and project review generally occur during the environmental process. A project proponent submits a complete Lake or Streambed Alteration Program notification package and fee to CDFW. CDFW has 30 days to review a proposed action and propose measures to protect affected fish and wildlife resources. The final proposal that is mutually agreed upon by CDFW and the project proponent becomes the Lake or Streambed Alteration Agreement (LSAA). The conditions of agreement and a CWA Section 404 permit often overlap.

Local

Kern County General Plan

The Kern County General Plan (KCGP) identifies the federal, state, and local statutes, ordinances, or policies that govern the conservation of biological resources that must be considered by Kern County (County) during the decision-making process for any project that could impact biological resources.

Land Use, Open Space, and Conservation Element

The Land Use, Open Space, and Conservation Element of the KCGP states that the element provides for a variety of land uses for future economic growth while also assuring the conservation of County's agricultural, natural, and resource attributes. Section 1.10, General Provisions, provides goals, policies, and implementation measures that apply to all types of discretionary projects.

Section 1.10.5 – Threatened and Endangered Species

Policy 27. Threatened or endangered plant and wildlife species should be protected in accordance with state and federal laws.

Policy 28. The County should work closely with state and federal agencies to assure that discretionary projects avoid or minimize impacts to fish, wildlife, and botanical resources.

Policy 29. The County will seek cooperative efforts with local, state, and federal agencies to protect listed threatened and endangered plant and wildlife species through the use of conservation plans and other methods promoting management and conservation of habitat lands.

Policy 30. The County will promote public awareness of endangered species laws to help educate property owners and the development community of local, state, and federal programs concerning endangered species conservation issues.

Policy 32. Riparian areas will be managed in accordance with USACE, and the CDFW rules and regulations to enhance the drainage, flood control, biological, recreational, and other beneficial uses while acknowledging existing land use patterns.

Implementation Measures. s Pursue the development and implementation of conservation programs with state and federal wildlife agencies for property owners desiring streamlined endangered species mitigation programs.

Energy Element – 5.2 Importance of Energy to Kern County

Policy 8. The County should work closely with local, state, and federal agencies to assure that energy projects (both discretionary and ministerial) avoid or minimize direct impacts to fish, wildlife, and botanical resources, wherever practical.

Policy 9. The County should develop and implement measures which result in long-term compensation for wildlife habitat, which is unavoidably damaged by energy exploration and development activities.

Zoning Ordinance of Kern County (Title 19 of the Ordinance Code of Kern County)

Chapter 19.64 Wind Energy (WE) Combining District

The Wind Energy (WE) Combining District (Chapter 19.64) contains development standards and conditions (Section 19.64.140) that would be applicable to the siting and operation of WTGs. The following Wind Energy-related provisions apply to biological resources issues relevant to the Project.

Section 19.64.120(A): No landscaping required in connection with wind-driven electrical generators.

Section 19.64.140(B): Towers and blades shall be painted a non-reflective, unobtrusive color or have a non-reflective surface.

Section 19.64.140(C): Fencing shall be erected for each wind machine or on the perimeter of the total project. Wind project facilities shall be enclosed with a minimum 4---foot-high security fence constructed of 4- strand barbed wire or materials of a higher quality. Fencing erected on the perimeter of the total project shall include minimum 18- by 18-inch signs warning of wind turbine dangers. Such signs shall be located a maximum of 300 feet apart and at all points of site ingress and egress. Where perimeter fencing is utilized, the Planning Director may waive this requirement for any portion of the site where unauthorized access is precluded due to topographic conditions.

Section 19.64.140(D): All onsite electrical power lines associated with wind machines shall be installed underground within 150 feet of a wind turbine and elsewhere when practicable, excepting "tie-ins" to utility type transmission poles, towers, and lines. However, if project terrain or other factors are found to be unsuitable to accomplish the intent and purpose of this provision, engineered aboveground electrical power lines shall be allowed.

Section 19.64.140(H): All wind projects including wind generators and towers shall comply with all applicable County, state, and federal laws, ordinances, or regulations.

Section 19.64.140(K): Prior to the issuance of any grading permit, a plan for the mitigation of potential soil erosion and sedimentation shall be prepared by a registered civil engineer or other professional and submitted for the approval by the Director of the Engineering, Surveying, and Permit Services Department. The plan shall include provisions for site revegetation, including any necessary re-soiling, proposed plant species, proposed plant density and percentage of ground coverage, and the methods and rates of application and shall include sediment collection facilities as may be required by the Engineering, Surveying, and Permit Services Department.

a. The soil erosion and sedimentation control plan shall be consistent with the applicable requirements of the California Regional Water Quality Control Board pertaining to the preparation and approval of Storm Water Pollution Prevention Plans. Notwithstanding the foregoing, the revegetation portion of the soil erosion and sedimentation plan shall be prepared by a professional biologist or other professional approved, in advance, by the Engineering, Surveying, and Permit Services Department.

b. The plan shall include a timetable for full implementation, estimated costs, and a surety bond or other security as approved by the Engineering, Surveying, and Permit Services Department in an amount determined by that department to guarantee plan implementation. The soil erosion and sedimentation control plan, including the revegetation plan and security instrument, shall be submitted to, and approved by, the

Floodplain Management Section of the Engineering, Surveying, and Permit Services Department prior to the issuance of any grading permit. The security shall remain on file with the Engineering, Surveying, and Permit Services Department until that department has verified that the plan has been successfully implemented.

Section 19.64.140(L): A minimum of onsite roadways shall be constructed. Temporary access roads utilized for initial machine installation shall be revegetated to a natural condition after completion of machine installation. The project proponent shall submit a plan of all proposed roads, temporary and permanent, for approval by the Planning Director prior to the issuance of any building permits.

Section 19.64.140(M): Construction of any slopes steeper than 4:1 shall be prohibited unless specifically authorized by the Kern County Planning Department and mitigation is provided.

Section 19.64.140(N): Wind project facilities shall be encircled with a 10-foot-wide fuel break. Subject fuel breaks may be installed for each wind machine or the perimeter of the total project, but in no event shall encompass more than 40 acres per block. Permanent access roads may also be considered fuel breaks. This requirement may be modified at the discretion of the Kern County Fire Chief.

3.18 Visual Resources

This section describes the Project study area in terms of its existing value as a visual resource, and describes the applicable regulatory framework established by the BLM to preserve scenic landscapes. Following a brief description of the characteristics and extent of the study area, this section focuses on determining the extent and quality of visual resources in the study area by referencing existing inventories that use the methodology outlined in BLM's Visual Resource Management (VRM) Program. The discussion provided herein is based on two primary sources of information:

- A *Visual Resource Inventory, BLM Ridgecrest, California Field Office*, dated April, 2012, and prepared for the BLM Ridgecrest Field Office by Otak, Inc.
- The *Tylerhorse Wind Energy Project Visibility Technical Report*, dated May 2012, and prepared by Sapphos.

These two sources provide baseline data by which to analyze impacts for the TWP on visual resources (see Section 4.18).

3.18.1 Environmental Setting

Regional Setting

The Project area is located in the northwestern portion of the Mojave Desert Geomorphic Province of California. The Antelope Valley portion of the Mojave Desert, which encompasses the site, is bordered on the north and west by the Tehachapi Mountains and the San Gabriel and San Bernardino Mountains. The City of Tehachapi located approximately 15 miles north of the Project site, and the unincorporated community of Rosamond is located approximately 17 miles to the west-southwest. In the immediate Project vicinity, other approved and or under construction wind farms and vacant lands are present. Other land uses in the area consist of the private airstrips including Lloyd's Landing, located east of Willow Spring Road, and Pontious airstrip, located to the far east of the Project area off of Faith Avenue.

Project Viewshed and Visibility

The Project viewshed is defined as all land areas from which any element of the Proposed Action would be visible. The TWP viewshed is shown in Figure 3.18-1, and was generated via computer-generated viewshed tools, based on several points that model the location and height of the proposed wind turbines; and a 10-meter resolution (horizontal) United States Geological Survey digital elevation model. Bolder colors in Figure 3.18-1 represent areas where a greater portion of the TWP would be visible. Distance zones in the figure provide a reference to approximate the prominence of the Proposed Action in views. The outer extent of the viewshed is a radius of 15 miles away from the outer edges of the Project footprint. Beyond 15 miles, it is not expected that the wind turbines would be visible since they would likely disappear into the

horizon line, be indistinguishable from other background elements, or be hidden by atmospheric conditions (e.g. haze, or dust) and intervening topography.

Visual Character

Visual character typically consists of the landforms, vegetation, water features, and cultural modifications that impart an overall visual impression of an area's landscape. Scenic areas typically include open space, landscaped corridors, and viewsheds. Visual character is influenced by many different landscape attributes including color contrasts, landform prominence, repetition of geometric forms, and uniqueness of textures among other characteristics.

The TWP site consists mostly of vacant natural open space used for grazing with varying topography consisting of gentle slopes and rolling hills, and does not contain any residences. Representative landscape photographs of the Project vicinity are presented in Figure 3.18-2a and Figure 3.18-2b. The proposed Project property is comprised of gently sloping terrain with elevations that range from roughly 3,480 feet to approximately 3,960 feet above mean sea level (MSL). The existing visual character of the area consists of largely undeveloped desert land. Similar wind energy developments to those proposed on the Project property are visible from portions of the property and from surrounding areas. Some of the more prominent visual features located within the Project study area include several prominent mountain ranges to the northwest and southwest of the TWP, including the Tehachapi and San Gabriel Mountains.

Approach to Baseline Analysis

BLM's Visual Resource Management (VRM) Policy is the agency's implementation of requirements from FLPMA and other sources for managing scenic resources. Pursuant to FLPMA, the BLM has developed and applied a standard visual assessment methodology to inventory and manage scenic values on lands under its jurisdiction. BLM Manual M-8400-Visual Resource Management (BLM, 1984), Handbook H-8410-Visual Resource Inventory (BLM, 1986a), and Handbook H-8431-Visual Resource Contrast Rating (BLM, 1986b) set forth the policies and procedures for determining visual resource values, establishing management objectives, and evaluating proposed actions for conformance to the established objectives for BLM-administered public lands. The following describes the three primary elements of the BLM's VRM Policy.

Determining Visual Resource Values

The primary means to establish visual resource values are to conduct a Visual Resource Inventory (VRI), as described in BLM handbook H-8410. There are four VRI Classes (I to IV) assigned as a representation of the relative visual value. VRI Class I has the highest value and VRI Class IV has the lowest. VRI Class I is reserved for special congressional designations or administrative decisions such as Wilderness Areas, visually sensitive ACECs, or Wild and Scenic Rivers, etc. Visual resource values are determined through a systematic process that documents the landscape's scenic quality, public sensitivity, and visibility. Rating units for each of these factors

are mapped individually, evaluated, and then combined through a map over-layering analysis. The three considerations are briefly described below.

Scenic Quality: Scenic Quality Rating Units (SQRUs) are delineated based on common characteristics of the landscape. There are seven criteria used for inventorying the landscape's scenic quality within each SQRU: landform, vegetation, water, color, influence of adjacent scenery, scarcity, and degree of cultural modification. Each factor is scored for its respective contribution to the scenic quality, the scores are summed, and the unit is given a rating of A (highest), B, or C (lowest) based on the final score.

Sensitivity Level: Sensitivity Level Rating Units (SLRU) are delineated and evaluated for public sensitivity to landscape change. Criteria used for determining level of sensitivity within each unit includes types of use, amount of use, public interest, adjacent land uses, special areas, and other factors. Each criterion is ranked high, medium, or low and an overall sensitivity level rating then is assigned to the unit.

Distance Zones (visibility): The third factor is visibility of the landscape evaluated from where people commonly view the landscape. The distance zones are divided into foreground/middleground (3 to 5 miles); background (5 to 15 miles); and seldom seen (beyond 15 miles or topographically concealed areas within the closer range distance zones).

The relationships between the rated values of scenic quality, sensitivity level, and visibility are cross-referenced with the VRI Matrix to determine the VRI Class, as shown in Table 3.18-1. VRI classes are informational in nature and provide the basis for considering visual values in the Resource Management Planning (RMP) process. They do not establish management direction and should not be used as a basis for constraining or encouraging surface disturbing activitiesProjectThey are considered the baseline data for existing conditions.

TABLE 3.18-1
DETERMINING VISUAL RESOURCE INVENTORY CLASSES

		Sensitivity Level								
		High			Medium			Low		
Special Areas		I	I	I	I	I	I	I	I	I
Scenic Quality	A	II	II	II	II	II	II	II	II	II
	B	II	III	III/IV[a]	III	IV	IV	IV	IV	IV
	C	III	IV	IV	IV	IV	IV	IV	IV	IV
		Fg/mg	Bg	Ss	Fg/mg	Bg	Ss	Fg/mg	Bg	Ss
		Distance Zones								

NOTES:
[a] If adjacent area is Class III or lower assign Class III, if higher assign Class IV
Fg/mg=Foreground/Middleground
Bg=Background
Ss=Seldom seen

SOURCE: BLM, 1986a

Establishing Management Objectives

VRM Classes (defined in **Table 3. 18-2**) are determined by considering both VRI Class designations (visual values) along with resource allocations and management decisions made in the applicable RMP. Management objectives for each VRM Class set the allowable level of visual change to the landscape that may be permitted for any surface-disturbing activity. The objective of VRM Class I is to preserve the character of the landscape, whereas VRM Class IV provides for activities that require major modification to the landscape. Thus, the allowable levels of visual change for VRM Classes I through IV are decreasingly restrictive.

TABLE 3.18-2
VISUAL RESOURCE MANAGEMENT CLASSES

VRM Class	Objective
Class I	The objective of this class is to preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention
Class II	The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape
Class III	The objective of this class is to partially retain the existing character of the landscape. The level of change to characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape
Class IV	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 should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.

VRI Classes are not intended to automatically become VRM class designations. VRM classes are determined through careful analyses of other land uses and demands. The VRM classes are considered a land use plan decision that sets forth guiding visual resource management objectives, and guides future land management actions and subsequent site-specific implementation decisions. The VRM class designations are to be assigned to all BLM public land. The VRM class designations may be different than the VRI classes assigned in the inventory and should reflect a balance between protection of visual values while meeting energy and other land use or commodity needs. For example, an area with a VRI Class II designation may be assigned a VRM Class IV designation, based on its overriding value for mineral resource extraction, or its designation as a utility corridor.

While the applicable RMP for the study area is the CDCA Plan, it does not contain a visual resource element, and has not established VRM Classes. For a description of the Project's applicable land use plan (CDCA) refer to Section 3.22.2 of this DEIS/PA. When a project is

proposed and there are no RMP-approved VRM objectives, Interim VRM Classes must be established in order to establish a baseline for analysis only. These classes are developed using the process just described, but may be restricted in geographic scope to areas affected by the proposed action. If the area is also without a VRI, then one must be conducted in order to provide a baseline of data by which to analyze impacts and to inform appropriate designation of Interim VRM Classes.

Evaluating Proposed Actions

Proposed plans of development are evaluated for conformance to the VRM Class objectives through the use of the Visual Resource Contrast Rating process set forth within BLM Handbook H-8431-1 (BLM, 1986b). Because this concerns the environmental consequences of the proposed action, this process is further described and applied in Section 4. 22.

Visual Resource Inventory of the Project Area

Sources of Visual Resource Inventory Data

The BLM has recently completed a large-scale visual resource inventory of BLM-managed lands within the California Desert District. The visual resource inventory of the Ridgecrest Field Office was most recently completed in April 2012 (herein referred to as the BLM Ridgecrest Field Office VRI) and shall be used as a source of baseline data (Otak Inc., 2012). The evaluation of scenic quality, visual sensitivity and distance zones relevant to the Project area is summarized below, and reproduced in full in AppendixG, Visual Resources.

Scenic Quality Rating

The BLM Ridgecrest Field Office VRI identified two scenic quality rating units that encompass the Project area: SQRU No. 017 (Sierra Nevada Foothills) and SQRU No. 031 (Mojave Valley).

SQRU No. 017 (Sierra Nevada Foothills)

The Sierra Nevada Foothills SQRU encompasses the northeast and western, more elevated portions of the Project site, and is described as a long, linear, discontinuous unit at the base of the Sierra Nevadas. Landform type ranges from small, rounded "toes" extending into the valley to more contiguous overlapping, rounded features. Minor riparian areas exist in side canyons. West and northwest slopes are more rugged and have denser vegetation. Scores given for each element of scenic quality, rated on a scale from 1 (lowest) to 5 (highest), were as follows: landform, 3. 5; vegetation, 3. 5; water, 0. 5; color, 3; adjacent scenery, 2. 5; scarcity, 2; cultural modifications, -1. 5. Based on this combination of scenic quality scores, the unit was given a rating of B (moderate) for scenic quality.

SQRU No. 031 (Mojave Valley)

The Mojave Valley SQRU encompasses the central portion of the Project site, and is described as a vast, open valley with mild, rolling hills and sloping sides. Vegetation is typical desert scrub with some patches of Joshua trees. The valley has typical development in addition to solar farms,

significant transmission lines, and wind turbines. Scores given for each element of scenic quality, rated on a scale from 1 (lowest) to 5 (highest), were as follows: landform, 1; vegetation, 1. 5; water, 0. 5; color, 1; adjacent scenery, 2; scarcity, 1; cultural modifications, -2. Based on this combination of scenic quality scores, the unit was given a rating of C (low) for scenic quality.

Visual Sensitivity

The BLM Ridgecrest Field Office VRI delineated a visual sensitivity rating unit specific to the Pacific Crest National Scenic Trail viewshed, which encompasses the Project area. The trail supports long-distance hiking and equestrian use, and spans from Canada to Mexico. While the level of use on the trail is moderate, the VRI assigned the visual sensitivity of the unit as high, based on the high sensitivity of user types (i.e., recreational users) and the fact the trail has national significance as a congressionally designated scenic trail.

Distance Zones

The distance zone for all portions of the Project area is assigned to foreground/middleground (under five miles) due to the short distance to the local travel network and lack of topographic screening of the Project area (see Figure 3.18-1).

Visual Resource Inventory Classes

Based on the VRI classification matrix in Table 3. 18-1, a portion of the Project site is rated as VRI Class II and the remainder is rated as VRI Class III. Scenic quality, visual sensitivity, distance zones, and VRI Classes for the Project are summarized in Table 3.18-3, and illustrated in Figure 3.18-3. This indicates the lands affected by the Project have a moderate-to-high visual value.

TABLE 3.18-3
SUMMARY OF VISUAL VALUES AND MANAGEMENT OBJECTIVES

Project Component	Scenic Quality Rating	Sensitivity Level	Distance Zone	Visual Resource Inventory Class[a]
Elevated northeastern and western portion of the Project Area	B	High	Foreground/Middleground	Class II
Central portion of the Project area	C	High	Foreground/Middleground	Class III

NOTE:
[a] As determined using the VRI classification matrix presented in Table 3. 18-1

SOURCE: Otak Inc., 2012

Interim Visual Resource Management Class Recommendations

As discussed above, there are currently no VRM Classes established for lands under BLM jurisdiction within the CDCA Plan area, and VRM classes differ from VRI Classes in that they

represent decisions about how the land will be managed in conjunction with resource allocations and management priorities outlined in the applicable RMP. The designation and adoption of Interim VRM classes conducted in support of a specific project is a BLM Field Office Manager decision.

For the TWP, the process of developing Interim VRM classes has not been completed (only the VRI has been developed). According to the BLM, the Project site is designated as "unclassified" in the CDCA Plan and thus automatically defaults to a VRM Class IV (Schiffer-Burdett personal communication, 2013). Thus, it is the BLM Field Office Manager's determination that the Project site will be managed in accordance with Interim VRM Class IV objectives, and the PCT will be managed in accordance with Interim VRM Class II objectives.

3.18.2 Applicable Regulations, Plans, and Standards

Federal

Section 4(f) of the U. S. Department of Transportation Act of 1966

Section 4(f), as amended, of the U. S. Department of Transportation Act of 1966, (codified at 49 USC § 303) protects public parks and recreational lands, wildlife refuges, and historic sites of national, state, or local significance from acquisition and conversion to transportation use. Federal regulations that implement Section 4(f) may be found at 23 CFR 771. 135. Under Section 4(f), the use of such publicly owned lands for transportation purposes can occur only if there is no feasible and prudent alternative to such use, and if the project includes all possible planning to minimize harm to those resources.

Federal Aviation Administration

The Federal Aviation Administration (FAA) regulates airspace and flyways for air travel. The FAA requires preparation of a Notice of Proposed Construction or Alteration (Form 7460-1) describing the project design and addressing compliance with FAA procedures. The notice must also include the final locations of structures, structure types, and structure heights. The FAA may then conduct its own study of the project and make recommendations to the proponent regarding possible airway marking, lighting, and other safety requirements (FAA, 2005). The FAA regulates regional airspace jurisdiction for the Edwards Air Force Base, which is located approximately 15 miles east of the proposed project site, and China Lake Naval Weapons Center, which is approximately 65 miles northeast of the property. Therefore, project compliance with FAA regulations was discussed in Section 3. 11, Public Health and Safety.

BLM Visual Resources Management (VRM) Classification

As part of its resource planning efforts, the (BLM conducts an inventory and analysis of scenic values on the public lands it administers to establish objectives for the management of activities that may affect visual resources located on those lands. Only activities that occur on BLM-administered property are subject to the management objectives related to designated VRM classifications. The BLM VRM System evaluates visual resources on BLM-administered lands

by classifying scenic quality, viewer sensitivity, and distance into one of four categories (Class I, II, III, or IV), with Class I having the highest visual value and Class IV having the least value. VRM classifications are designated through BLM land use plans; however, if VRM classifications are not established for an area, then the local BLM office will establish an Interim VRM classification on a project by-project basis.

National Park Service, National Trails System Act

The National Trails System Act of 1969 seeks to preserve scenic and natural qualities along trails and recognizes the rights of private landowners and provides that "full consideration shall be given to minimizing the adverse effects upon the adjacent landowner or user and his operation" in the development and use of a trail. The National Trails System Act assigns management responsibility for trails to various federal resource agencies, depending on which agency holds jurisdiction over the land on which the trail is located in a given area.

The Pacific Crest National Scenic Trail (commonly known as the Pacific Crest Trail or PCT) was created under the National Trails System Act to provide for outdoor recreation opportunities and the conservation of significant scenic, historic, natural, or cultural qualities. The proposed Project is comprised of three BLM-administered parcels. The proposed Project property's western parcel is located in Section 28 adjacent to the PCT's western side; the central parcel is located in Section 26, approximately 1 mile east from the PCT at its closest point; and the third parcel is located in Section 24, approximately 2 miles east from the PCT at its closet point. The proposed Project property would be visible from viewpoints along the PCT. Therefore, Project compliance with the National Trails System Act was considered in this analysis

CDCA Plan

Under FLPMA §601, the BLM has developed the CDCA Plan to "provide 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 the maintenance of environmental quality. " Central to the CDCA Plan is the establishment of Multiple Use Classes that govern the management of the public lands based on the sensitivity of the resources and types of uses for each geographic area. As discussed in greater detail in Section 3. 09, *Multiple Use Classes*, multiple use classes are divided into four categories, each of which have specific guidelines for the management of specific resource or activity areas contained and discussed in each of the CDCA Plan Elements.

The proposed Project site is located within lands designated as "unclassified. " There is no stand-alone visual resource plan element within the CDCA; however, the visual values are addressed within the recreation element of the CDCA Plan. According to the recreation element, the BLM will take the following actions to effectively manage for activities involving the alteration of the natural character of the landscape (BLM, 1980):

1. The appropriate levels of management, protection, and rehabilitation on all public lands in the CDCA will be identified, commensurate with visual resource management objectives in the multiple use class guidelines.

2. Proposed activities will be evaluated to determine the extent of change created in any given landscape and to specify appropriate design or mitigation measures using the BLM's contrast rating process.

The contrast rating process is a tool used to determine the extent of visual impact that proposed resource management activities would create in a landscape. It serves as a guide for reducing visual impacts to acceptable levels as defined by the visual management objectives and multiple use class guidelines. Applicable visual resource management objectives are identified above in Section 3.18.1 and defined in Table 3.18-2. The visual contrast rating process is further discussed in Section 4.18, Visual Resources.

State

Caltrans Scenic Highways

Caltrans defines a State Scenic Highway as any freeway, highway, road, or other public ROW that traverses an area of exceptional scenic quality. Suitability for designation as a State Scenic Highway is based on vividness, intactness, and unity (Caltrans, 1995).

1. Vividness is the extent to which the landscape is memorable. This is associated with the distinctiveness, diversity, and contrast of visual elements. A vivid landscape makes an immediate and lasting impression to the viewer.

2. Intactness is the integrity of visual order in the landscape and the extent to which the natural landscape is free from visual intrusions (i. e. , buildings, structures, equipment, grading).

3. Unity is the extent to which development is sensitive to and in visual harmony with the natural landscape.

There are no designated or eligible State Scenic Highways from which views of the Project would be available (Caltrans, 2011).

Local

Kern County General Plan

Chapter 1. Land Use, Open Space, and Conservation Element

***Policy 47*:** Ensure that light and glare from discretionary new development projects are minimized in rural as well as urban areas.

***Policy 48*:** Encourage the use of low-glare lighting to minimize nighttime glare effects on neighboring properties.

County Zoning Ordinance (Title 19), Revised March 2009: Chapter 19. 64. Wind Energy (WE) Combining District

The WE Combining District (Chapter 19. 64) contains development standards and conditions (Section 19. 64. 140) that would be applicable to the siting and operation of WTGs. The following provisions apply to aesthetics and visual resources issues related to the Project.

B. Towers and blades shall be painted a nonreflective, unobtrusive color or have a non-reflective surface.

D. All onsite electrical power lines associated with wind machines shall be installed underground within one hundred fifty (150) feet of a wind turbine and elsewhere when practicable, excepting therefrom "tie-ins" to utility type transmission poles, towers, and lines. However, if project terrain or other factors are found to be unsuitable to accomplish the intent and purpose of this provision, engineered aboveground electrical power lines shall be allowed.

G. Wind generator machine and associated meteorological tower overall height shall not exceed six hundred (600) feet and is subject to Section 19. 08. 160. B. For the purposes of this chapter, machine height shall be measured as follows:

- Overall machine height of horizontal axis machines shall be measured from grade to the top of the structure, including the uppermost extension of any blades.
- Machine height of vertical axis or other machine designs shall be measured from grade to the highest point of the structure.

I. One (1) project identification sign, located at each point of project ingress and egress, not to exceed thirty-two (32) square feet in area, may be erected on the project site. No other signs shall be installed other than safety signs and the required warning signs. The developer shall submit a sign elevation drawing to the Planning Director for review and approval prior to installation.

3.19 Water Resources

3.19.1 Environmental Setting

Climate and Precipitation

The Proposed Action is located in the western portion of the Mojave Desert, within Antelope Valley. The area lies within the rain shadow of the Tehachapi Mountains. In a normal year, the Project area receives an average of 3 to 6 inches of rainfall (Pinnacle, 2012). Most precipitation in the valley falls during the months of December through March, but cyclonic storms in the fall and convectional storms in the summer are not uncommon. According to data from the National Oceanic and Atmospheric Administration (NOAA), rainfall for a given storm event, such as the 100-year 24 hour storm, is not consistent over the entire watershed. This is due to the size of the watershed and change in elevation from high desert at the low end to the Tehachapi Mountains in the upper reaches. Stormwater reaching the TWP area is often generated several miles away in the upper reaches of the watershed. Generally, rainfall increases with the elevation of the watershed. According to NOAA data, the 100-year, 24-hour rainfall ranges from 4.5 to 6.0 inches. The 2-year 24-hour rainfall is expected to range between 1.0 and 1.4 inches over the watershed. Climate onsite is characteristic of the western Mojave, with hot summers reaching average temperature ranges of 67 degrees Fahrenheit (F) (night) to 98 degrees F (day) in July, and 31 degrees F (night) to 59 degrees F (day) in January.

Groundwater

The TWP area is located within the Antelope Valley Groundwater Basin, which underlies the Antelope Valley in the western portion of the Mojave Desert. The basin is bounded on the northwest by the Garlock fault zone at the base of the Tehachapi Mountains and on the southwest by the San Andreas fault zone at the base of the San Gabriel Mountains. The basin is bounded on the east by ridges, buttes, and low hills that form a surface and groundwater drainage divide, and on the north by Fremont Valley Groundwater Basin at a groundwater divide approximated by a southeastward-trending line from the mouth of Oak Creek through Middle Butte to exposed bedrock near Gem Hill, and by the Rand Mountains farther east.

The Antelope Valley Groundwater Basin is overlain by an internally-draining surface water basin. Runoff in Big Rock and Little Rock Creeks from the San Gabriel Mountains and in Cottonwood Creek from the Tehachapi Mountains, including the TWP area, flow toward a closed basin at Rosamond Lake (dry) (DWR, 2004). A second dry lake, Rogers Lake, is located in a closed basin in the northern part of Antelope Valley, that collects ephemeral runoff from surrounding hills (DWR, 2004).

The primary water-bearing materials are Pleistocene and Holocene age unconsolidated alluvial and lacustrine deposits that consist of compact gravels, sand, silt, and clay. These deposits are coarse and rich in gravel near mountains and hills, but become finer grained and better sorted toward the central parts of the valley. Coarse alluvial deposits form the two main aquifers of the

basin; a lower aquifer and an upper aquifer. Most of the clays were deposited in large perennial lakes during periods of heavy precipitation. These clays are interbedded with lenses of coarser waterbearing material as thick as 20 feet; in contrast, the clay beds are as thick as 400 feet. The lake deposits form a zone of low permeability between the permeable alluvium of the upper aquifer and that of the lower aquifer, although leakage between the two aquifers may occur. The upper aquifer, which is the primary source of groundwater for the valley, is generally unconfined whereas the lower aquifer is generally confined. Specific yield of these deposits ranges from 1 to 30 percent, and wells typically have a moderate to high ability for water well production (DWR, 2004).

Recharge to the Antelope Valley Groundwater Basin results primarily from perennial runoff from the surrounding mountains and hills. Most recharge occurs at the foot of these mountains and hills, by percolation through the upper portions of alluvial fan systems. The Big Rock and Little Rock Creeks, in the southern part of the basin, contribute about 80 percent of runoff into the basin (DWR, 2004). Other minor recharge is from return of irrigation water and septic system effluent (DWR, 2004).

Groundwater levels onsite have remained relatively stable historically. The California Department of Water Resources supports a state-wide groundwater level monitoring and reporting program, which includes wells in close proximity to the TWP area. Two groundwater wells located approximately 0.5 mi west of the western side of the TWP area indicate historic groundwater levels ranging from approximately 155 to 215 feet below ground surface (bgs), from 1962 through 1999 (DWR, 2004). On the valley floor along Rosamond Blvd, adjacent to the southeastern corner of the TWP area, groundwater levels are deeper (364 ft bgs), but have remained stable over at least the latter half of the last decade (DWR, 2004). However, some parts of the groundwater basin have experienced declining groundwater levels, including areas along the highway 14 corridor from Palmdale through Lancaster to Rosamond and surrounding Rogers Lake on Edwards Air Force Base (DWR, 2004).

Historically, groundwater in the basin flowed north from the San Gabriel Mountains and south and east from the Tehachapi Mountains toward Rosamond Lake, Rogers Lake, and Buckhorn Lake. These dry lakes are places where groundwater can discharge by evaporation. Because of recent groundwater pumping, groundwater levels and flow have been altered in urban areas such as Lancaster and Edwards Air Force Base.

The total storage capacity of the groundwater basin has been reported at 68,000,000 acre-feet (AF) and 70,000,000 AF (DWR, 2004). Though a current groundwater budget for the Antelope Valley Groundwater Basin is not available, prior estimates for relevant extraction include 25,803 AF of urban extraction and 1,006 AF of agricultural extraction during the 1990s (DWR, 2004). DWR (2004 and references therein) report various estimates of natural recharge averaging 48,000 AF/year, with a range in annual natural recharge of 31,200 to 59,100 AF/year.

Groundwater Quality

Groundwater in the Antelope Valley Groundwater Basin is typically calcium bicarbonate in character near the surrounding mountains, including the vicinity of the TWP area. Groundwater is typically sodium bicarbonate or sodium sulfate in character in the central part of the basin. In the eastern part of the basin, the upper aquifer has sodium-calcium bicarbonate type water and the lower aquifer has sodium bicarbonate type water. TDS content in the basin averages 300 mg/L and ranges from 200 to 800 mg/L (DWR, 2004). Data from 213 public supply wells show an average TDS content of 374 mg/L and ranges from 123 to 1,970 mg/L (DWR, 2004). High levels of boron and nitrates have been observed in some portions of the basin (DWR, 2004).

Surface Water Hydrology and Flooding

Surface Water Hydrology and Drainage

The Proposed Action is located entirely within the Antelope – Willow Springs Watershed. The total area potentially contributing storm water to the TWP area comprises roughly 8,610 acres, or 14 square miles, is roughly 5 miles long at its greatest dimension, and exhibits an elevation change over 4,300 feet (the highest peak of the watershed exceeds 7,800 feet). Gradients range from 35 percent in the upper reaches of the watershed to less than 2 percent in areas of proposed turbine pads and access roads (Pinnacle, 2012).

The TWP area is located at the base of the Tehachapi Mountains on an alluvial fan. An alluvial fan is a deposit of soils, due to water erosion upslope, that consists of gradations of sands and gravels. As typical of alluvial fans, the TWP area has few well-eroded and defined drainage channels. Most storm water flow reaching the Project area is in the form of sheet-flow and desert washes. Many drainage channels that do exist in the alluvial fan area are not well defined, and are subject to relatively abrupt changes in course during major storm events due to erosion and deposition.

The most significant and well-defined watercourses through the TWP area are the Tylerhorse Canyon, Gamble Spring, and Burham Canyon watercourses. These watercourses meander north-south through the Project limits. Many watercourses identified on the USGS quadrangle map are less defined. In cases of less defined watercourses, storm water will primarily intercept access roads in the form of overland flow.

The TWP area contains many dirt roads and trails that have been used by off-road recreational vehicles. Motorcycle tracks and off-road motorcycles were observed during field work conducted onsite. Many of the trails and dirt roads exhibit significant erosion and loss of vegetative cover. All existing roads and trails cross drainage courses at grade.

Soil Erosion Potential

Erosion onsite can occur when sediments become entrained in stormwater runoff, especially in areas with concentrated flows, such as drainages and channels. Erosivity is a function of soil type, intensities of rainfall events, and topography. Soils with high silt content have a higher

potential for erosion since they are moderately susceptible to detachment. Sands and gravels are also easily detached, but are far less erodible since they have high rates of infiltration. A review of soils located onsite (Pinnacle, 2012) indicated that soils in the TWP area generally have a high percentage of sand (between 69 and 80 percent), with percentages of silt close to 20, and percentages of clay as much as 10. All site soils fall into either type A or B hydrologic soil group, indicating relatively high infiltration rates. The TWP area is gently sloping, and with the aforementioned combination of low silt content and high infiltration rates, is not normally considered highly erodible. However, the site can receive high-intensity storms of short duration, and does receive run-on from off-site precipitation in higher elevations.

To add perspective to the erosion potential, the Environmental Protection Agency's (EPA's) erosivity calculator was used to calculate an R Factor (Erosivity Factor), which yielded a value of 12 (based on a construction time of one year). Using the Revised Universal Soil Loss Equation (RUSLE),) this yields 6.5 tons of erosion per acre per year. This amount falls into the category of Low Sediment Risk, under the State of California General National Pollutant Discharge Elimination System (NPDES) Permit. For additional discussion, refer to Pinnacle, 2012.

Flooding

The Federal Emergency Management Agency (FEMA) provides information on flood hazard and frequency for cities and counties on its Flood Insurance Rate Maps (FIRMs). FEMA identifies designated zones to indicate flood hazard potential. The FIRM identifies Special Flood Hazard Areas (SFHA). SFHAs are defined as areas that will be inundated by the flood event having a 1-percent chance of being equaled or exceeded in any given year. The 1-percent annual chance flood is also referred to as the base flood or 100-year flood as shown on Figure 3.19-1 (see Appendix A), the entire Project area has been mapped for FEMA flood hazards and no portion of the TWP area is located within a 100-year flood (Zone "A" as discussed in Section 4.19). However, 100-year flooding does occur along the Antelope Valley floor, as flood flows travel downhill toward Rosamond Lake.

Water Use

The Proposed Action would require water during construction and operation periods. Construction related water use would be utilized during the construction process, primarily for dust control purposes. Water would be trucked onsite to the construction area. Project construction would not require the use of any onsite groundwater wells or other water sources. In the event that additional demand for dust suppression is identified, other commercially available dust suppressants, such as tree resin emulsion products, may be applied. During operations, water onsite would be required to support approximately 8 to 12 full time employees. All water used onsite during operations would be imported from off site. Specifically, as discussed in Chapter 2, water would be taken from supplies associated with the adjacent Manzana Wind Energy and Pacific Wind Energy Projects. Water use would support employee related needs, including drinking water and limited other uses. Table 3.19-1 provides a summary of anticipated water use.

TABLE 3.19-1
ESTIMATED WATER SUPPLY REQUIREMENTS CONSTRUCTION, OPERATION, AND MAINTENANCE

Use	Daily Use, Gallons	Duration, Days	Total Annual Use, Gallons	Total Annual Use, Acre-Feet
Non-Potable				
Construction	27,273	88	2,400,006	7
Operation and Maintenance	1,958	365	714,816	2
Potable				
O&M Facilities	To be supplied by commercial vendor. No groundwater would be pumped at the TWP site in support of operations. Bottled water would be trucked onsite for potable use.			

SOURCE: BLM, 2011.

Wastewater

Employees onsite during construction and operation periods would utilize portable toilets. Wastewater from these toilets would be removed on an as-needed basis, and treated at regionally-located facilities. No onsite wastewater disposal would occur.

3.19.2 Applicable Regulations, Plans, and Standards

Federal

Clean Water Act

The Clean Water Act (CWA) established the basic structure for regulating discharges of pollutants into "Waters of the United States. " The act specifies a variety of regulatory and non-regulatory tools to sharply reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff.

a. Sections 303 and 304 provide for water quality standards, criteria, and guidelines.

b. Section 401 requires every applicant for a federal permit or license for any activity that may result in a discharge to a water body to obtain a water quality certification that the proposed activity will comply with applicable water quality standards.

c. Section 402 regulates point- and nonpoint-source discharges to surface waters through the NPDES program. In California, the State Water Resources Control Board (SWRCB) oversees the NPDES program, which is administered by the Regional Water Quality Control Boards (RWQCBs). The NPDES program provides for both general permits (those that cover a number of similar or related activities) and individual permits. Anti-backsliding requirements provided for under CWA Sections 402(o)(2) and 303(d)(4) prohibit slackening of discharge requirements and regulations under revised NPDES

permits. With isolated/limited exceptions, these regulations require effluent limitations in a reissued permit to be at least as stringent as those contained in the previous permit.

d. Section 404establishes a program to regulate the discharge of dredged and fill material into waters of the U.S., including some wetlands. Activities in waters of the U.S. that are regulated under this program include fills for development, water resource projects (e.g., dams and levees), infrastructure development (e.g., highways and airports), and conversion of wetlands to uplands for farming and forestry.

Executive Order 11988 and the Federal Emergency Management Agency

Under Executive Order 11988, the FEMA is responsible for management of floodplain areas. FEMA administers the National Flood Insurance Program (NFIP) to provide subsidized flood insurance to communities that comply with FEMA regulations limiting development in floodplains. FEMA also issues FIRMs that identify which land areas are subject to flooding. These maps provide flood information and identify flood hazard zones in the community. No portion of the Project area is located within a 100-year flood Zone "A" as defined by FEMA according to the FIRM. The design standard for flood protection is established by FEMA, with the minimum level of flood protection for new development determined to be the 1-in-100 annual exceedance probability (AEP) (i.e., the 100-year flood event).

Safe Drinking Water Act

Under the Safe Drinking Water Act (Public Law 93-523), passed in 1974, the US EPA regulates contaminants of concern to domestic water supply. Contaminants of concern relevant to domestic water supply are defined as those that pose a public health threat or that alter the aesthetic acceptability of the water. These types of contaminants are regulated by EPA primary and secondary Maximum Contaminant Levels (MCLs) that are applicable to treated water supplies delivered to the distribution system. MCLs and the process for setting these standards are reviewed triennially. Amendments to the SDWA enacted in 1986 established an accelerated schedule for setting MCLs for drinking water. EPA has delegated to the California Department of Health Services (DHS) the responsibility for administering California's drinking-water program. DHS is accountable to EPA for program implementation and for adopting standards and regulations that are at least as stringent as those developed by EPA. The applicable state primary and secondary MCLs are set forth in Title 22, Division 4, Chapter 15, Article 4 of the California Code of Regulations.

State

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act, as revised in December, 2007, provides for protection of the quality of all waters of the State of California for use and enjoyment by the people of California. It further provides that all activities that may affect the quality of waters of the State shall be regulated to obtain the highest water quality that is reasonable, considering all

demands being made and to be made on those waters. The Act also establishes provisions for a statewide program for the control of water quality, recognizing that waters of the state are increasingly influenced by interbasin water development projects and other statewide considerations, and that factors such as precipitation, topography, population, recreation, agriculture, industry, and economic development vary regionally within the state. The statewide program for water quality control is therefore administered most effectively on a local level, with statewide oversight. Within this framework, the Act authorizes the SWRCB and regional boards to oversee responsibility for the coordination and control of water quality within California, including those responsibilities under the Federal CWACWA that have been delegated to the state.

State Water Resources Control Board

Created by the California State Legislature in 1967, the SWRCB holds authority over water resources allocation and water quality protection within the state. The five-member SWRCB allocates water rights, adjudicates water right disputes, develops statewide water protection plans, establishes water quality standards, and guides the nine Regional Water Quality Control Boards. The mission of SWRCB is to, "preserve, enhance, and restore the quality of California's water resources, and ensure their proper allocation and efficient use for the benefit of present and future generations."

Lahontan Regional Water Quality Control Board

The Lahontan Regional Water Quality Control Board's (LRWQCB) Basin Plan establishes water quality objectives, including narrative and numerical standards that protect the beneficial uses of surface and ground waters in the region. The Basin Plan describes implementation activities and other control measures designed to ensure compliance with statewide plans and policies, and to provide comprehensive water quality planning.

Beneficial water uses are of two types: consumptive and non-consumptive. Consumptive uses are those normally associated with human activities, primarily municipal, industrial and irrigation uses that consume water and cause corresponding reduction and/or depletion of water supply. Non-consumptive uses include swimming, boating, waterskiing, fishing, hydropower generation, and other uses that do not significantly deplete water supplies. Historical beneficial uses of water within the Antelope Valley and surrounding desert areas have largely been associated with irrigated agriculture and mining.

Beneficial uses have not been designated for onsite drainages and washes. However, beneficial uses have been designated elsewhere within the Antelope Valley. These include, generally, municipal supply, agricultural supply, groundwater recharge, freshwater replenishment, contact and non-contact recreation, commercial and sportfishing, cold freshwater habitat, wildlife habitat, spawning/reproduction/development, water quality enhancement, and flood peak attenuation/flood water storage. No drainages located in or downstream of the TWP site are listed for water quality impairment.

California Fish and Game Code

Section 1602 of the California Fish and Game Code protects the natural flow, bed, channel, and bank of any river, stream, or lake designated by the California Department of Fish and Wildlife (CDFW) in which there is, at any time, any existing fish or wildlife resources, or benefit for the resources. Section 1602 applies to all perennial, intermittent, and ephemeral rivers, streams, and lakes in the State, and requires any person, State, or local governmental agency, or public utility to notify the CDFW before beginning any activity that will:

a. Substantially divert or obstruct the natural flow of any river, stream or lake;

b. Substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake; or

c. Deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake.

Preliminary jurisdictional evaluations have been completed in support of the TWP These evaluations will be made permanent during final engineering and design of the TWP. Acquisition of a Streambed Alteration Agreement, if required, would occur prior to construction of the TWP, thus maintaining compliance with Section1602 of the California Fish and Game Code. A Streambed Alteration Agreement is required if the CDFW determines the activity could substantially adversely affect an existing fish and wildlife resource.

3.20 Wild Horse and Burros

The BLM administers wild horses and burros pursuant to the Wild Free-Roaming Horse and Burro Act of 1971. This includes the management of Herd Areas (HA) and Herd Management Areas (HMAs). HAs are the geographic areas where wild horses and/or burros were found at the passage of the Wild Free-Roaming Horse and Burro Act in 1971. HMAs represent areas within HAs where the decision has been made by the BLM, through the applicable Land Use Plans, to manage for populations of wild horses and/or burros in those areas. California contains 33 HAs and 22 HMAs (BLM, 2011a).

According to BLM GIS data, there are no historical HAs for wild horse and burros or HMAs within or adjacent to the proposed TWP site (BLM, 2011a). The Kramer HA is 47 miles east of the TWP site in the northeast portion of San Bernardino County; the Centennial HA is 59 miles northeast of the proposed TWP site and is within Kern, San Bernardino, and Inyo Counties; and the Slate Range HA is 69 miles northeast of the proposed TWP site and is within San Bernardino and Inyo Counties. The Centennial HMA is 80 miles northeast of the TWP site within Inyo County. As a result, the proposed TWP site would not contain or traverse any established HAs or HMA and would not result in any impacts on wild horses or burros, and therefore a full analysis of impacts associated with the Proposed Action is not required.

3.21 Wildland Fire Ecology

This section describes relevant environmental and regulatory settings related to potential impacts of the proposed TWP on wildland fires and related fire protection activities. The Proposed Action falls within the planning boundaries of the West Mojave Plan (WEMO). Fire risk in the study area is small compared to most parts of the state. Most fires in the desert are caused by lightning or vehicles.

3.21.1 Environmental Setting

The Project area is located within the western Mojave Desert region of the desert floristic province. This region mixes an array of geographic substrates, topographic features, climatic regimes, soil types, and other physical factors, which have combined to produce a mosaic of floristic components and associated natural habitats. Mojave Desert vegetation is dominated by low, widely spaced shrubs. The most widely distributed plant is the creosote bush (*Larrea tridentata*), which covers extensive areas in nearly pure stands, often in close association with bursage (*Ambrosia dumosa*), California Juniper (*Juniperous californica*), and Joshua tree (*Yucca brevifolia*).

The Proposed Action falls within the planning boundaries of the West Mojave Plan (WEMO). The WEMO is a Habitat Conservation Plan (HCP) pursuant to the federal Endangered Species Act (ESA) covering over 9 million acres in five counties with the purpose of creating a comprehensive strategy to conserve and protect the desert tortoise, the Mohave ground squirrel, and nearly 100 other sensitive species, as well as the natural communities in which they reside. The 9,359,070-acre planning area includes 3,263,874 acres of BLM-administered public lands; 3,029,230 acres of private lands; and 102,168 acres of lands administered by the State of California within portions of Inyo, Kern, Los Angeles, and San Bernardino counties. The WEMO area in Kern County begins at the intersection of Kern, Inyo, and San Bernardino Counties northeast of Ridgecrest, California. The area follows the Sierra Nevada Mountain Range to the southwest and continues to the Tehachapi Mountains and then to the Los Angeles County line east-northeast of Quail Lake.

Compared to other parts of the state, there are relatively few fires in the planning area and most are small. Most fires in the desert are caused by lightning or vehicles. The BLM and National Park Service (NPS) have collaborated in the development of the Fire Management Activity Plan (FMAP) for the California Desert. The FMAP brings together fire management goals for biological resources, wilderness, and other sources and establishes fire management standards and prevention and protection programs. The FMAP includes limitations on fire suppression methods in critical habitat and other tortoise habitat; the limitations are designed to limit habitat disturbance while keeping fires small.

The vegetation-fuel types in the Study Area: Joshua tree woodland, Mojave Desert wash scrub, Mojavean juniper woodland and scrub, and non-native grassland, are not fire-adapted. Fire, particularly repeated wildfire is deleterious to these plant communities and tends to deplete the

native woody shrubs that characterize and dominate these communities in favor of exotic weedy annuals. Exotic and invasive weedy annual plants such as Mediterranean splitgrass and brome grasses dominate the ground cover in some places, where they have displaced native annual and perennial grasses and forbs. There are indications that the increase in exotic annual grasses might be enhanced by nitrogen deposition from air pollution originating outside of the planning area (e. g. , Los Angeles Basin, Coachella Valley) (Brooks 1998, Allen et al. 1997, Environmental Protection Agency 1996 as cited by BLM, 2002). There is some evidence that disturbances such as livestock grazing, OHV use, and fire have contributed to the spread of exotic annuals (Brooks 1998, Malo and Suarez 1995 as cited by BLM, 2002).

Within the TWP study area, Mojavean juniper woodland and scrub is the predominant vegetation community and represents the largest area at 74 percent (813 acres), followed by non-native grassland at about 17 percent (185 acres). Joshua tree woodland contributes to another 8 percent (92 acres) of the total, while the remaining 1 percent (10 acres) of the Project area includes Mojave Desert wash scrub. With the exception of non-native grassland, major threats to these community types include fire, grazing, off-road vehicles, and invasions of alien species.

Wildfire suppression occurs with the minimum surface disturbance practical in all habitats. Wildfires are suppressed using a mix of only the following methods in order to minimize habitat disturbance:

- Aerial attack
- Crews using hand tools to create fire breaks
- Mobile attack engines limited to public roads, designated open routes, and routes authorized for limited-use
- Use of foam and/or fire retardant
- Use of earth-moving equipment or tracked vehicles (such as bulldozers) in critical situations to protect life, property, or high-value resource.
- Post fire-suppression mitigation includes rehabilitation of firebreaks and other ground disturbances and obliteration of vehicle tracts sufficient to discourage future casual use. Hand tools are used for rehabilitation activities whenever feasible.

The non-native grassland areas within the study area are most likely to support or carry wildfires compared to the native vegetation types previously described.

3.21.2 Applicable Regulations, Plans, and Standards

Federal

BLM California Desert Conservation Area (CDCA) Plan

The Project would be located within the boundaries of the BLM's CDCA (BLM, 2007). The CDCA, which covers 25 million acres of land, serves as the BLM’s land use guide for

management of these public lands. The Project is located within areas in the CDCA that are designated as Multiple-Use Class L (Limited Use), Class M (Moderate), and Unclassified. Unclassified lands are managed on a case-by-case basis, per the BLM Land Tenure Adjustment Element. The BLM lands that are designated as Multiple-Use Class L (Limited Use) and Class M (Moderate) are subject to the following multiple use class guidelines relevant to fire:

> **9.0 Fire Management**. Fire suppression measures will be taken in accordance with specific fire management plans subject to such conditions as the authorized officer deems necessary, such as use of motorized vehicle, aircraft, and fire retardant chemicals.
>
> **Chapter III (Guidelines for Specific Activities), F. Fire Management**. BLM will continue all presuppression, suppression, and post-suppression fire activities under current methods of operation, using caution to avoid unnecessary implement of an area's suitability for preservation as wilderness, until new fire management plans are developed for specific wilderness study areas.

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 (FERC, 2011). 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 for example, the state has adopted General Order (GO) 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. 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 are founding on the following guiding principles (USFS, 2008):

1. Firefighter and public safety is the first priority in every fire management activity.
2. The role of wildland fire as an essential ecological process and natural change agent will be incorporated into the planning process.
3. Fire management plans, programs, and activities support land and resource management plans and their implementation.
4. Sound risk management is a foundation for all fire management activities.

5. Fire management programs and activities are economically viable, based upon values to be protected, costs, and land and resource management objectives.
6. Fire management plans and activities are based upon the best available science.
7. Fire management plans and activities incorporate public health and environmental quality considerations.
8. Federal, State, tribal, local, interagency, and international coordination and cooperation are essential.
9. Standardization of policies and procedures among federal agencies is an ongoing objective.

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, more stringent, standard (General Order 95) rather than a general national standard. The National Electric Safety Code is not discussed further.

National Corporate Standards

North American Electric Reliability Corporation Standards

The NERC is a nonprofit corporation comprising ten 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. 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 of 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. 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).

State

California Fire Code

The California Fire Code is contained within Chapter 9 of Title 24 of the California Code of Regulations (CCR). The California Fire Code is created by the California Buildings Standards Commission and regulates fire suppression and prevention at fixed facilities. 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.

CCR Title 14, Section 1254

CCR 14 Section 1254 presents guidelines for minimum clearance requirements on non-exempt utility poles. The proposed Project structures would be primarily exempted from the clearance requirements with the exception of cable poles and dead-end structures. As shown in CCR 14 Section 1254, the firebreak clearances required by PRC 4292 (as described below) are applicable within an imaginary cylindrical space surrounding each pole or tower on which a switch, fuse, transformer or lightning arrester is attached and surrounding each dead-end or corner pole, unless such pole or tower is exempt from minimum clearance requirements by provisions of 14, CCR, 1255 or PRC 4296. The radius of the cylindroid is 3.1 m (10 feet) measured horizontally from the outer circumference of the specified pole or tower with height equal to the distance from the intersection of the imaginary vertical exterior surface of the cylindroid with the ground to an intersection with a horizontal plane passing through the highest point at which a conductor is attached to such pole or tower. Flammable vegetation and materials located wholly or partially within the firebreak space shall be treated as follows:

1. At ground level – remove flammable materials, including but not limited to, ground litter, duff and dead or desiccated vegetation that will propagate fire
2. From 0 to 2. 4 m (0 to 8 feet) above ground level remove flammable trash, debris or other materials, grass, herbaceous and brush vegetation. All limbs and foliage of living trees shall be removed up to a height of 2. 4 m (8 feet).
3. From 2. 4 m (8 feet) to horizontal plane of highest point of conductor attachment remove dead, diseased or dying limbs and foliage from living sound trees and any dead, diseased or dying trees in their entirety.

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, 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:

1. Involve the community in the fire management planning process
2. Assess public and private resources that could be damaged by wildfires
3. 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-management solutions are fuels 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 (Cal Fire, 2010). The Fire Plan does not contain any specific requirements or regulations. It acts as more of an assessment of current fire management practices and standards and makes recommendations on how best to improve the practices and standards in place.

California Public Utilities Commission (CPUC) General Order 95: Rules for Overhead Electric Line Construction

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 2009. 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 (CPUC, 2009). The latter, governed by rule 35, and inspection requirements, governed by Rule 31.2 are summarized here.

Rule 35, Tree Trimming, defines minimum vegetation clearances around power lines. Rule 35 guidelines require 10-foot radial clearances for any conductor of a line operating at 110,000 Volts or more, but less than 300,000 Volts. This requirement would apply to the proposed 230-kV lines.

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.

California Public Resources Code (PRC) 4291

PRC 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 (Cal Fire, 2011).

California PRC 4292, Powerline Hazard Reduction

PRC 4292 requires a 10-foot clearance of any tree branches or ground vegetation from around the base of power poles carrying more than 110 kV. The firebreak clearances required by PRC 4292 are applicable within an imaginary cylindrical space surrounding each pole or tower on which a switch, fuse, transformer or lightning arrester is attached and surrounding each dead-end or corner pole, unless such pole or tower is exempt from minimum clearance requirements by provisions of PRC 4296. The proposed structures associated with the Proposed Action would be primarily exempt due to their design specifications.

California PRC 4293, Powerline Clearance Required

PRC 4293 presents guidelines for line clearance including a minimum of 10 feet of vegetation clearance from any conductor operating at 110,000 volts or higher.

Kern County

Kern County General Plan (KCGP), Revised September 2009; Chapter 4 (Safety Element) Section 4.6: Wildland and Urban Fire

Policies

Policy 1. Require discretionary projects to assess impacts on emergency services and facilities.

Policy 3. The County will encourage the promotion of fire prevention methods to reduce service protection costs and costs to taxpayers.

Policy 4. Ensure that new development of properties have sufficient access for emergency vehicles and for the evacuation of residents.

Policy 6. All discretionary projects shall comply with the adopted Fire Code and the requirements of the Fire Department.

Implementation Measures

Implementation Measure A. Require that all development comply with the requirements of the Kern County Fire Department or other appropriate agency regarding access, fire flows, and fire protection facilities.

Kern County Wildland Fire Management Plan (WFMP), Adopted January 2004 and Updated 2009

The WFMP documents the assessment of the wildland fire situation throughout the SRA within the County. It includes stakeholder contributions and priorities, and identifies strategic targets for pre-fire solutions as defined by the people who live and work with the local Fire problem. The goal of the Plan is to reduce costs and losses from wildfire by protecting assets at risk through focused pre-fire management prescriptions and increasing initial attack success. Based on this

assessment, preventive measures are implemented, including the creation of wildfire protection zones. The WFMP is referenced in this analysis; however, the goals set forth by this plan are not applicable to development of the Project.

Mojave Specific Plan

The easternmost portions of the Project site are within an area governed by the Mojave Specific Plan. Land use designations within the Mojave Specific Plan area are consistent with the Kern County General Plan. Applicable goals, objectives, and policies within the Mojave Specific Plan relevant to the area of wildland fire ecology include:

Chapter 9, Seismic and Safety Element

Goals

Promote awareness of potential human-caused hazards.

Ensure that new development does not create a burden on adequate levels of fire and law enforcement services.

Objectives

Objective 9.3. Protect the community from human-caused hazards related to air and ground transportation, hazardous materials, and other human activities.

Objective 9.4. Ensure that new development does not degrade fire and law enforcement service levels.

Policies

Policy 9.1.1 (A-1, A-3, M-2). Safety measures required by the Uniform Building Code and the Kern County Seismic Safety Element during construction of new buildings are hereby incorporated by reference.

Policy 9.4.3 (F-2). Ensure that street widths and clearance areas are sufficient to accommodate fire protection and emergency vehicles during land division review and site plan review.

Policy 9.4.5 (L-1). Continue to enforce the Kern County Health, Fire and Building standards for new development and rehabilitation of existing structures.

3.22 Wildlife Resources

This section describes the environmental setting and wildlife resources that are present or have the potential to occur within the Tylerhorse Wind Project (TWP or project) area. This discussion is based, in part, upon information from the following sources:

- Addendum No. 2 to the Biological Resources Technical Report for the Tylerhorse Wind Energy Project (Sapphos, 2014);
- Addendum to the Biological Resources Technical Report for the Tylerhorse Wind Energy Project (Sapphos, 2013);
- The Biological Resources Technical Report (BRTR) for the Tylerhorse Wind Energy Project (Sapphos, 2011a). Project area wildlife surveys summarized in the BRTR include reconnaissance-level wildlife surveys, U.S. Fish and Wildlife Service protocol-level surveys for desert tortoise, passerine point-count surveys, mist-netting surveys, raptor migration surveys, raptor nest searches, aerial (helicopter) surveys for golden eagle, nocturnal avian migration surveys, small mammal trapping, and acoustic bat surveys. The BRTR is provided in Appendix C-1 of this Draft EIS.
- A memorandum summarizing Golden Eagle Use at Tylerhorse Wind Energy Project and Surrounding Renewable Energy Projects (Sapphos, 2013)
- The Biological Assessment prepared for the Tylerhorse Wind Energy Project (Sapphos, 2011b);
- A list of threatened, endangered, and candidate species provided by the U.S. Fish and Wildlife Service (USFWS, 2013);
- The U.S. Bureau of Land Management's (BLM) West Mojave Plan;
- The California Natural Diversity Database (CNDDB; CDFW, 2013).

3.22.1 Environmental Setting

The project area and surrounding region has a variety of physical features that offer a diversity of habitat types, represented by a characteristic assemblage of plant species. The size of the area, together with its geology, soils, climate, and anthropogenic influences have combined to produce a mosaic of vegetation types and associated wildlife species. The climate of the project area and surrounding region is characterized by dry air masses, high summer temperatures, infrequent precipitation, and an extremely high rate of evaporation. Precipitation averages approximately 5 inches annually and occurs primarily during the winter months. For most of the region, the availability of water or soil moisture is the critical factor that determines the broad distribution of vegetation types and associated wildlife species.

The region is characterized by rolling hills and desert flats, as well as the Tehachapi and Piute Mountains at the southern terminus of the Sierra Nevada. Many of the foothill and desert flats support operating wind farms; this region is known as the Tehachapi Wind Resource Area (TWRA). The TWRA is located at the confluence of three ecotones[1]: the Sierra-Tehachapi-Mojave Ecotone, the Central Valley Ecotone, and the Antelope Valley Ecotone. As such, a variety of vegetation types and concomitant habitats occur in the general region, including various desert scrub communities (most commonly creosote bush and saltbush scrubs), Joshua tree and pinyon/juniper woodlands, and conifer woodlands at higher elevations. Riparian habitats also occur in some areas, but are generally not widespread on the desert floor or foothill areas. Several areas have high biodiversity because of the region's location at the desert-mountain transition zone. The region supports at least four endemic animals and 13 endemic plants, and a number of disjunctive localities where plants and animals range into the western Mojave Desert far from their primary distribution.

Natural communities on the project site and surrounding area include five distinct, primary plant communities, as discussed in Section 3-17: 1) Joshua Tree Woodland, 2) Mojave Desert Wash Scrub, 3) Mojavean Juniper Woodland and Scrub, 4) Mojave Mixed Woody Scrub, and 5) Non-Native Grassland. There are also a number of distinct local landscape features that contribute to the diversity and abundance of wildlife in the area, as these features generally provide microhabitats for wildlife uniquely adapted to or dependent on them. Such features include washes, gullies, rocky outcrops, cliffs, taluses, and cave entrances.

Most wildlife species within the project area are adapted to extreme drought conditions, including sparse vegetative cover and limited sources of permanent water. However, seeps and springs, which occur in the region but do not occur in the project area, provide perennial sources of water and a high concentration of vegetation and cover that contribute to increased wildlife diversity in these areas. Large mammals, such as pronghorn antelope (*Antilocapra americana*), coyote (*Canis latrans*), and desert kit fox (*Vulpes macrotis arsipus*), use these water sources and return to them regularly.

A number of unnamed ephemeral washes and drainages occur throughout the project area. These areas generally contain a diversity of desert shrub species, have more structured and complex vegetative assemblages, and possess higher wildlife diversity than the surrounding upland habitats. Washes with substantial vegetation cover can function as movement corridors for mammals and serve as congregation and feeding areas for a variety of bird species.

Wildlife Species

Amphibians

A number of amphibians occur in the western Mojave Desert region. For the most part, these are restricted to areas around ephemeral or permanent water sources. Amphibian species that may potentially occur in the project area include California toad (*Anaxyrus boreas halophilus*) and

[1] An ecotone is a transitional area of vegetation between two or more different vegetation communities.

Baja California treefrog (*Pseudacris hypochondriaca*). No amphibians were observed in the project area during reconnaissance surveys (Sapphos, 2011a). Each of the ephemeral drainages that traverse the project area provide only limited water, and these features may not pool water for a sufficient duration to support toad or treefrog breeding.

Reptiles

Reptiles are especially adapted to drought conditions and extreme temperatures and are therefore well represented in the project area and surrounding region. Some of the more common species observed in the project area include the side-blotched lizard (*Uta stansburiana*), western whiptail (*Aspidoscelis* (=*Cnemidophorus*) *tigris*), western sagebrush lizard (*Sceloporus graciosus gracilis*), desert iguana (*Dipsosaurus dorsalis*), long-nosed leopard lizard (*Gambelia wislizenii*), desert spiny lizard (*Sceloporus magister*), and western skink (*Eumeces skiltonianus*) (Sapphos, 2011a).

No snakes were observed in the project area during surveys. Snake species that occur within the range of the Proposed Action for which suitable habitat may occur on-site include the red racer (*Coluber* (=*Masticophis*) *flagellum piceus*), California striped racer (*Coluber* (=*Masticophis*) *lateralis lateralis*), western long-nosed snake (*Rhinocheilus lecontei*), gopher snake (*Pituophis catenifer* (=*melanoleucus*)), glossy snake (*Arizona elegans*), California kingsnake (*Lampropeltis getulus californiae*), desert nightsnake (*Hypsiglena chlorophaea deserticola*), lyre snake (*Trimorphodon biscutatus*), Mohave desert sidewinder (*Crotalus cerastes cerastes*), northern Mojave rattlesnake (*C. scutulatus scutulatus*) (Sapphos, 2011a).

Avian Species

As characterized in the BRTR (see Appendix C-1 of this Draft EIS), avian use data for the project area from site specific studies and recent surveys for the adjacent (and to a degree, encompassing) Manzana Wind Energy Project and Pacific Wind Energy Project conducted between 2004 and 2006 (Sapphos, 2011a). Diurnal avian surveys were conducted in conjunction with botanical surveys and performed during summer 2004; diurnal avian surveys were also conducted during fall 2004 and in 2005 and 2006. Avian field surveys, including raptor surveys, were undertaken in the broader project vicinity thatincludes the project area, as depicted in Figure 3.22-1. Raptor surveys consisted of nest searches and migration counts. Raptor migration surveys were conducted in fall 2004, during 26 days from October 3 to November 16; in spring 2005, during 30 days from February 16 to April 20; and in fall 2005, during 52 days from August 15 to November 12. Raptor nest surveys were conducted during July 2, 3, 8, 12, 14, 17, 20, 24, and 30, 2005, and August 7, 2005, for 10 to 12 hours per day by vehicle and on foot; and on August 13, 2005, for 3 hours by aircraft to determine the presence or absence of raptor nests. The search effort for raptor nests in natural sites (e.g., trees, shrubs, and rocky ledges) and anthropogenic sites (e.g., steel transmission line towers or buildings) also included searches of common raven (*Corvus corax*) nests. Ravens are considered a pest species in the western Mojave Desert because they prey on hatchling and juvenile desert tortoise. Raptor presence/absence surveys were also conducted during winter 2004 to 2005. Counts of wintering raptors were conducted by one biologist for 6 to 8 hours per day for 30 days from November 30, 2004, to February 9, 2005, during six periods: November 30 to December 7, December 9 to 14, December 16 to January 2, January 6 to 14,

January 16 to 31, and February 8 to 9 (Sapphos, 2011a). Avian count surveys were additionally performed on the project site between December 2011 and November 2012 (Sapphos, 2013).

Additional aerial surveys, focusing on golden eagles, were conducted by helicopter on May 20 to 31, 2010, February 28 to March 10, 2011, and May 25 to June 1, 2011, to determine the presence or absence of golden eagle nests, and the nests of other raptors. Finally, the BRTR includes the findings of nocturnal avian migration data by DeTech, Inc. that was collected for the Manzana Wind Energy Project. These surveys used current and archived radar remote sensing data from the project vicinity as well as ten additional regional samples to determine current and historic levels of bird activity, distribution, and seasonal variation in the vicinity of the project (Sapphos, 2011a). Table 3.22-1 summarizes avian surveys conducted on adjacent project sites that were summarized in the BRTR.

TABLE 3.22-1
AVIAN SURVEYS CONDUCTED IN THE PROJECT AREA AND VICINITY

Survey Type	Dates	Comments
Diurnal Avian Surveys	Summer, 2004	Summer 2004 surveys conducted in conjunction with transect surveys for plant community mapping.
	Fall, 2004 – 2006	Fall 2004 – 2006 surveys conducted in conjunction with raptor surveys. 2005 and 2006 surveys were conducted for the adjacent Manzana Project.
	December 2011 – November 2012	Bird Use Counts of project area
Diurnal Avian Surveys	Dec. 2011 to Nov.2012	Four seasons of bird use count (BUC) surveys were performed at Tylerhorse for one continuous year between Dec. 2011 and Nov. 2012. BUCs were performed in accordance with CEC guidelines, which recommend approximately 1 to 1.5 BUC points per square mile.
Raptor Migration Surveys	Oct. – Nov. 16, 2004 (Fall) Feb. 16 – Apr. 20, 2005 (Spring) Aug. 15 – Nov. 12, 2005 (Fall)	Surveys conducted for Manzana and Pacific Wind Projects.
Raptor Wintering Surveys	Six survey periods between Nov. 30, 2004 and Feb. 9, 2005; 59 total survey days.	Surveys conducted by one biologist for 6 to 8 hours per day. Surveys conducted for the Manzana Project.
Raptor Nest Searches	Jul. 2, 3, 8, 12, 14, 17, 20, 24, & 30, 2005. Aug. 7 and 13, 2005 (aerial)	Aerial surveys were conducted for 10 to 12 hours per day, though the Aug. 13 survey duration was three hours. Surveys were performed by raptor biologist P. Bloom, Ph.D.

Source: Sapphos, 2011a; 2013

The 59 bird species observed in the Manzana Project area as residents or as migrants/transients are representative of the birds which occur at the Tylerhorse site because the MWEP is located immediately adjacent to the Tylerhorse site. The lack of available water or areas of dense brush or trees within the project areas (both Manzana and the proposed Tylerhorse site) precludes many of the bird species that otherwise occur in this region from breeding and nesting in this area.

Most bird species that occur in the project area and surrounding region are associated with the Mojavean juniper woodland and scrub vegetation community. The most commonly observed bird species observed during surveys are black-throated sparrow (*Amphispiza bilineata*), rock wren (*Salpinctes obsoletus*), desert horned lark (*Eremophila alpestris arenicola*), common raven (*Corvus corax*), mourning dove (*Zenaida macroura*), northern mockingbird (*Mimus polyglottos*), sage thrasher (*Oreoscoptes montanus*), chipping sparrow (*Spizella passerina*), song sparrow (*Melospiza melodia*), and western meadowlark (*Sturnella neglecta*). The ash-throated flycatcher (*Myiarchus cinerascens*) and blue-gray gnatcatcher (*Polioptila caerulea*) were noted in Mojave Desert Wash Scrub systems. Numerous birds occur as winter or summer residents or migrants that occur only during brief periods in the spring and fall. Some common species include the yellow-rumped warbler (*Dendroica coronata*), Wilson's warbler (*Wilsonia pusilla*), cliff swallow (*Hirundo pyrrhonata*), ruby-crowned kinglet (*Regulus calendula*), hooded oriole (*Icterus cucullatus*), and white-crowned sparrow (*Zonotrichia leucophrys*). Most of the above species were also noted during 2011 to 2012 avian surveys of the project site, in addition to Bewick's wren (*Thryomanes bewickii*), Brewer's blackbird (*Euphagus cyanocephalus*), cactus wren (*Campylorhynchus brunneicapillus*), California quail (*Callipepla californica*), greater roadrunner (*Geococcyx californianus*), and loggerhead shrike (*Lanius ludovicianus*), among common birds species (Sapphos, 2013).

Raptors reported in the Manzana Project area include northern harrier (*Circus cyaneus*), red-tailed hawk (*Buteo jamaicensis*), Swainson's hawk (*Buteo swainsoni*), American kestrel (*Falco sparverius*), burrowing owl (*Athene cunicularia*), barn owl (*Tyto alba*), great horned owl (*Bubo virginianus*), prairie falcon (*Falco mexicanus*), peregrine falcon *(Falco peregrinus*), and golden eagle (*Aquila chrysaetos*). The most common raptors in the project area are red-tailed hawk and American kestrel. A peregrine falcon was observed during surveys and several observations of golden eagles were documented foraging within the project area, where they can be characterized as having regular though infrequent occurrences. The peregrine falcon is generally uncommon in the project area given the relatively low number of observations over several years of directed surveys undertaken for the project. American kestrel, merlin (*Falco columbarius*), and Prairie falcon were also noted on the project site in 2011 to 2012 (Sapphos, 2013).

Many migrating raptors follow distinct routes during fall and spring migrations. These routes, which vary among species, are largely defined by topography and water barriers such as coastal boundaries, and are also influenced by ecological and meteorological factors. The project area lacks the topographical and water barriers described above; therefore, migrating raptors are not expected to occur in high concentrations on the site (Sapphos, 2011a).

Mammals

Most desert mammals are nocturnal, but occasionally a few may be seen during the day. Several carnivores occupy various habitats that occur in or near the project area. Those that may be observed within the project area and surrounding vicinity include bobcat (*Lynx rufus*), coyote (*Canis latrans*), desert kit fox , and American badger (*Taxidea taxus*).

Focused surveys for special-status small mammal species (i.e., rodents) by Sapphos Environmental, Inc. in May, 2010 resulted in the capture of 152 individuals of seven (7) species in the project area. Allowing for likely repeat captures, ranked by relative abundance among species, Panamint kangaroo rat (*Dipodomys panamintus)* was the most abundant species detected at trapping locations, followed by chisel-toothed kangaroo rat (*Dipodomys microps*) and deer mouse (*Peromyscus maniculatus*). Southern grasshopper mouse (*Onychomys torridus*) and San Joaquin pocket mouse (*Perognathus inornatus*) collectively comprised fewer than 10 percent of captures, with a single occurrence of Botta's pocket gopher (*Thomomys bottae*) and white-tailed antelope ground squirrel (*Ammospermophilus leucurus*). Other typical small mammals from the region include black-tailed jackrabbit (*Lepus californicus*), desert cottontail rabbit (*Sylvilagus audubonii*), desert woodrat (*Neotoma lepida*), round-tailed ground squirrel (*Citellus tereticaudus*), various cricetid mice (e.g., *Onychomys* sp., *Reithrodontomys megalotis*, *Peromyscus* spp.), and pocket mice (*Perognathus* spp.) (Sapphos, 2011a).

Two ungulate species occupy the lands adjacent to the project area: the California mule deer (*Odocoileus hemionus californicus*) and the pronghorn antelope, from which the Antelope Valley gets its name. Pronghorns in the Antelope Valley occur in small groups in grassland, riparian, and alkali desert scrub habitats. Neither of these two species are known to use the project site.

As a result of the habitat assessment performed for the broader project vicinity, it was determined that habitats present in the project area may be suitable to support common and special-status bats of both resident and migratory species. Bats that have been verified in the local project area include three resident species: western mastiff bat (*Eumops perotis*), pallid bat (*Antrozous pallidus*), and western pipistrelle (*Parastrellus hesperus*); and three migratory species: hoary bat (*Lasiurus cinereus*), Mexican free-tailed bat (*Tadarida brasiliensis*), and big brown bat (*Eptesicus fuscus*). Six additional bat species may additionally occur in the project area. These include four resident bat species: Yuma myotis (*Myotis yumanensis*), California myotis (*Myotis californicus*), western small-footed myotis (*Myotis ciliolabrum*), and silver-haired bat (*Lasionycteris noctivagans*); and two migratory species: little brown bat (*Myotis lucifugus*) and long-legged myotis (*Myotis volans*). No bat roosts were identified during surveys of the project area, though it was determined that trees and rock crevices within the project area may provide suitable roosting habitat for resident and migratory bat species (Sapphos, 2011a).

Connectivity and Migration Corridors

Habitat linkages are contiguous areas of open space that connect two larger habitat areas. Linkages provide for both diffusion and dispersal for a variety of species within the landscape. In addition, linkages can serve as primary habitat for some smaller species. Corridors are linear linkages between two or more habitat patches. Corridors provide for movement and dispersal, but do not necessarily include habitat capable of supporting all life history requirements of a species.

The project area is situated along the southeastern side of the Tehachapi Connection, identified by the South Coast Missing Linkages as one of 15 major landscape linkages essential to a functioning wildland network both within the South Coast Ecoregion and between this ecoregion and neighboring

ones (South Coast Wildlands, 2008). The Tehachapi Connection was recognized as perhaps the most important linkage within the ecoregion, as it is the only wildland that connects two major mountain systems: the Sierra Nevada and the San Emigdio Mountains. The Connection follows the Tehachapi Mountains, which provide habitat and connectivity for mountain species as well as species from the San Joaquin Valley and the Mojave Desert. The Tehachapi Mountains are rich in biodiversity as they lie at the confluence of five major biogeographic regions.

No known bird migration routes cross the project area; however, the larger Antelope Valley is traversed by a number of migratory birds. The scrub and grassland habitats in the project area provide suitable foraging habitat during bird movements. Although the Pacific Flyway, a large migration route used by numerous bird species that pass throughout large portions of California, is within the vicinity of the project area, birding records do not indicate focused or well-defined migration patterns in the immediate area, but rather broad-front, scattered migration (Sapphos, 2011a).

Special-Status Wildlife

Special-status wildlife species are those animals that, because of their recognized rarity or vulnerability resulting from various causes including, but not limited to, habitat loss or population decline, are recognized by federal or State agencies. Some of these species receive specific protection that is defined by federal endangered species legislation. Others have been designated as special-status on the basis of adopted policies and expertise of federal resource agencies or other organizations with acknowledged expertise, or policies adopted by local governmental agencies such as counties, cities, and special districts to meet local conservation objectives. Special-status species include:

1. Species listed or proposed for listing as threatened or endangered, or are candidates for possible future listing as threatened or endangered, under the federal Endangered Species Act or the California Endangered Species Act;
2. Species covered under an adopted Habitat Conservation Plan (HCP)/Natural Communities Conservation Plan (NCCP);
3. Species considered “sensitive” by the BLM;
4. Wildlife species of special concern to CDFW; and/or
5. Fully protected species in California (Fish and Game Code §§ 3511, 4700, and 5050).

Table 3.22-2 lists those special-status wildlife species that are known to occur in the project area based on the results of project surveys, and those with potential to occur in the project area based on the species’ range and the availability of potentially suitable habitat in the project area. This list is based in part upon CNDDB and USFWS records, results of focused and reconnaissance-level surveys in the project area and nearby environs, a review of known range and distribution maps, agency input, and BLM species lists. The table below also includes the habitat requirements and a determination of species potential to occurrence in the project area based on results of field surveys and habitat preferences. It should be noted that most of the avian species detected in the project area are protected under the Migratory Bird Treaty Act of 1918, but are not included in Table 3.22.-2.

TABLE 3.22-2
SPECIAL-STATUS WILDLIFE SPECIES WITH POTENTIAL TO OCCUR IN THE PROJECT AREA

Species	Status Federal/State/ BLM Sensitive/ WEMO[a]	Habitat	Potential Occurrence in the Project Area
Amphibians			
Tehachapi slender salamander *Batrachoseps stebbinsi*	--/ST/BLM/--	Uncommon in suitable habitat in a small number of isolated localities in the Piute and Tehachapi Mountains of Kern County and perhaps in Los Angeles and Ventura Counties. Elevation 2,500 to 5,000 feet above mean sea level (MSL). Preferred habitats include valley foothill hardwood conifer and valley foothill riparian.	Low. No known local occurrences, with the nearest known sighting about 7.5 miles northwest of the project area. The site lacks suitable habitat.
Yellow-blotched salamander (*Ensatina eschscholtzii croceator*	--/CSC/BLM/ --	Occurs in forests and well-shaded canyons, as well as oak woodlands and chaparral. Needs surface objects, such as logs, boards, rocks , old rodent burrows or other underground retreat.	Low. No known occurrences of this species in the project area. The nearest CNDDB record is 8.5 miles to the north. Not identified during detailed surveys at the Manzana Wind Energy Project property and downstream locations.
Reptiles			
Desert tortoise *Gopherus agassizii*	FT/ST/--/WEMO	Main habitats include desert scrub, desert wash, desert alluvial fans, and Joshua tree, but the desert tortoise is also found in other desert habitats.	**Moderate**. The nearest CNDDB record is approximately 7 miles east of the project area. Desert tortoise sign (e.g., burrows and excrement) were detected in the zone of influence east of the Manzana Project property. Not identified during protocol surveys. Suitable desert scrub and desert wash habitat present.
Coast horned lizard *Phrynosoma coronatum blainvillii*	--/CSC/BLM/ WEMO	Found in a variety of vegetation types, including coastal scrub, coastal bluff scrub, valley and foothill grassland, chaparral, cismontane woodland, piñon and juniper woodlands, riparian scrub, riparian woodland and desert wash. In inland areas, this species is restricted to areas with pockets of open microhabitat, created by disturbance.	**Mod.-High**. Present in the northwest corner of the Manzana Wind Energy Project property. Suitable desert wash, juniper woodland and grassland habitat present.
Birds			
Cooper's hawk *Accipiter cooperii*	--/CSC/--/ WEMO	Nests in a wide variety of habitat types, from riparian woodlands and digger pine oak woodlands through mixed conifer forests.	**Low/Mod.** Potential foraging habitat present; not currently known to nest in the project area. Common local resident and migrant in the Antelope Valley.

TABLE 3.22-2 (CONTINUED)
SPECIAL-STATUS WILDLIFE SPECIES WITH POTENTIAL TO OCCUR IN THE PROJECT AREA

Species	Status Federal/State/ BLM Sensitive/ WEMO[a]	Habitat	Potential Occurrence in the Project Area
Sharp-shinned hawk *Accipiter striatus*	--/Watch List/ WEMO	Nests in riparian growths of deciduous trees and live oaks. Preys mostly on small passerine birds.	**Low/Mod**. Not known to breed in Southern California. Common migrant. No nests observed during surveys.
Golden eagle *Aquila chrysaetos*	BCC/CFP/BLM/ --	Nests in canyons and large trees in open habitats. Forages chiefly for mammalian prey in grasslands and over open areas.	**Present (foraging/migration)**.No nesting population, but eagles were observed using the general project area during migration and overwintering. Nearest known nest is 14 to 15 miles west of the project area.
Burrowing owl *Athene cunicularia*	BCC/CSC/BLM/ WEMO	Level, open, dry, heavily grazed, or low stature grassland or desert vegetation with burrows excavated by badgers, prairie dogs, or ground squirrels. Preys on small mammals and insects.	**Present**. No burrowing owl nests identified, but burrowing owl observed within the project area.
Ferruginous hawk *Buteo regalis*	--/CSC/--/ WEMO	Breeds outside of California. Forages in open grasslands.	**Low/Mod. (foraging/migration)**. Not known to nest in project area, but common as a winter resident.
Swainson's hawk *Buteo swainsoni*	BCC/ST/BLM/ WEMO	Nests in oaks or cottonwoods, often in or near riparian habitats. Forages for small mammals, birds, and reptiles in grasslands, irrigated pastures, and grain fields.	**High (foraging)/ Present (migration)**. No nesting populations, but numerous Swainson's hawks fly over the project area during the spring and fall migrations. Potential foraging habitat available on-site.
Vaux's swift (*Chaetura vauxi*	--/CSC/--/ WEMO	Feeds aerially on small insects; breeds in forest habitats.	**Present**. Observed during directed songbird surveys. Nesting unlikely.
Northern harrier *Circus cyaneus*	--/CSC/--/ WEMO	Grasslands, meadows, marshes, and seasonal and agricultural wetlands.	**Low/Mod. (foraging/migration).** No known nesting, but common during winter and during migration.
White-tailed kite *Elanus leucurus*	--/CFP/BLM/--	Low foothills or valley areas with valley or live oaks, riparian areas, and marshes near open grasslands for foraging.	**Moderate Potential**. Nearest nesting occurrence is 31 miles away. No nesting habitat available within the project area, but kites may pass the project area during migrations.
Merlin *Falco columbarius*	--/CSC/--/--	Inhabit open country areas preferring a mix of low to medium-height vegetation with some trees.	**Low/Mod. (foraging/movement).** Nesting areas are not available, but may occur seasonally during migration periods.

TABLE 3.22-2 (CONTINUED)
SPECIAL-STATUS WILDLIFE SPECIES WITH POTENTIAL TO OCCUR IN THE PROJECT AREA

Species	Status Federal/State/ BLM Sensitive/ WEMO[a]	Habitat	Potential Occurrence in the Project Area
Prairie falcon *Falco mexicanus*	BCC/CSC/--/--	Primarily inhabits perennial grasslands, savannahs, and rangeland. Nests on cliffs, canyons, and rock outcrops.	Low. No known nests on-site, but ranges from an infrequent or common year-round resident and migrant.
American peregrine falcon *Falco peregrines anatum*	BCC/--/--/--	An aerial forager that preys almost chiefly on birds; prefers open areas, habitats along rivers, sea cliffs, and islands.	**Present**. No nesting population, but observed using the Manzana Project property during migration. Summer residents are known nearby.
California condor *Gymnogyps californianus*	FE/SE/CFP/--	Lives in rocky scrubland, coniferous forests, and oak savannas. They are often found near cliffs or large trees, which they use as nesting sites. Individual birds have a large home range and have been known to travel up to 150 miles in search of carrion.	**Low/Mod. (foraging/movement)**. No known occurrences of this species within the project area or the immediate surrounding region. Nearest known occurrence of this species is approximately 3.9 miles to the west of the project area.
Loggerhead shrike *Lanius ludovicianus*	BCC/CSC/--/ WEMO	Nests in shrublands and forages in open grasslands. Often found associated with agriculture and urbanized areas. All plant community types in the proposed project property provide suitable habitat.	**Present**. Present as a year-round resident at the project area. Approximately 10 to 15 breeding pairs observed.
American white pelican *Pelecanus erythrorhynchos*	--/CSC/--/ WEMO	Sandy coastal beaches and lagoons, waterfronts and pilings, and rocky cliffs.	Absent (nesting). Observed migrating through the project area in large numbers.
Le Conte's thrasher *Toxostoma lecontei*	BCC/CSC/--/ WEMO	Resides in desert scrub habitats, primarily open desert wash, alkali desert scrub, and desert succulent scrub. Occupies deserts with sparse vegetation consisting of cholla and creosote bush. Suitable habitat in the proposed project property includes Mojave Desert Wash Scrub, Mojave Creosote Bush Scrub, Mojavean Juniper Woodland and Scrub, Joshua Tree Woodland, and Mojave Mixed Woody Scrub plant communities.	**Present**. Present as a year-round resident at the project area.
Mammals			
Pallid bat *Antrozous pallidus*	--/CSC/BLM/--	Roosts in rock crevices, caves, mineshafts, under bridges, in buildings, and within hollow trees throughout the west. Roosts in colonies of 10 to 100, emerging at night to forage on the ground. Forms nursery colonies, and gives birth usually in June.	**Moderate (foraging)**. No CNDDB records, though pallid bats were detected in the during USFS acoustic surveys. No roosts detected in the project area, but bats may roost in trees and rock crevices, and migrate through and forage in the project area.

TABLE 3.22-2 (CONTINUED)
SPECIAL-STATUS WILDLIFE SPECIES WITH POTENTIAL TO OCCUR IN THE PROJECT AREA

Species	Status Federal/State/ BLM Sensitive/ WEMO[a]	Habitat	Potential Occurrence in the Project Area
Western mastiff bat *Eumops perotis*	--/CSC/BLM/--	Seeks diurnal refuge in vertical rock crevices on cliffs. Roost entrances are large and horizontally oriented, and face downward as they are entered from below, where there is an unobstructed drop of several meters. Colonies from two to several dozen bats. Leaves day roosts late in the evening to forage on moths, crickets, and grasshoppers. Not believed to use night roosts. Normally one young, probably in June to early July, within nursery colonies.	**Moderate (foraging)**. No CNDDB records, though western mastiff bats were detected in the during USFS acoustic surveys. No roosts detected in the project area, but bats may roost in rock crevices. This species may migrate through and forage in the project area.
Western Small-footed myotis *Myotis ciliolabrum*	--/CSC/BLM/--	Occurs in deserts and desert mountains in the western U.S. Occupies daytime roosts in cracks in canyon walls, caves, mines, in tree bark, or in abandoned houses. It hibernates in caves or mine tunnels within the summer range, and is active during winter. Trees and rock crevices in the proposed project property could provide suitable roosting habitat.	**Moderate (foraging)**. No local CNDDB records and no roosts detected in the project area. However, may roost in trees in the project area. This species may also migrate through and forage on habitat in the project area.
Yuma myotis *Myotis yumanensis*	--/--/BLM/--	Common in western U.S., generally prefers open forests and woodlands with sources of water. Feeds on small flying insects and forages over water sources. Roosts in buildings, mines, caves, crevices, and separate night roosts may be used. Roost location and foraging proximity is closely tied to bodies of water.	**Moderate (foraging)**. No local CNDDB records and no roosts detected in the project area. This species may roost in rock crevices in the project area and may migrate through and forage on habitat in the project area.
Southern grasshopper mouse *Onychomys torridus*	--/CSC/--/--	Consumes soft-bodied insects including cutworms and grasshoppers. Lives in arid habitats but requires no open water sources. The species forages under and within shrubs and crosses open areas. Desert Native Grassland and Mojave Mixed Woody Scrub provide suitable habitat in the project area.	**Present**. Identified with an approximately 10-acre area of the project area, in Desert Native Grassland and Mojave Mixed Wood Scrub plant communities.

TABLE 3.22-2 (CONTINUED)
SPECIAL-STATUS WILDLIFE SPECIES WITH POTENTIAL TO OCCUR IN THE PROJECT AREA

Species	Status Federal/State/ BLM Sensitive/ WEMO[a]	Habitat	Potential Occurrence in the Project Area
San Joaquin pocket mouse *Perognathus inornatus*	--/CSC/BLM/--	Consumes grass and forbs seeds as well as soft-bodied insects including cutworms and grasshoppers. Lives in arid habitats but requires no open water sources. The species forages under and within shrubs and crosses open areas. Desert Native Grassland and Mojave Mixed Woody Scrub provide potentially suitable habitat in the proposed project property.	**Present**. Occurs in approximately 10- acre area of the project area, in Desert Native Grassland and Mojave Mixed Wood Scrub plant communities.
American badger *Taxidea taxus*	--/CSC/--/--	Lives in open, generally flat grasslands, shrublands, and forb dominated habitat, often in association with ground squirrel colonies. Generally occurs in fairly low density, and often excavates new burrows for short-duration stays. All of the plant communities in the proposed project property provide potentially suitable habitat.	**High**. Identified during surveys within Creosote Bush Scrub plant community in the southern portion of the Manzana Project property. One observed during surveys.
Mohave ground squirrel *Xerospermophilus mohavensis*	--/ST/BLM/ WEMO	Inhabits open desert scrub, alkali desert scrub, and Joshua Tree Woodland. Restricted to Mohave Desert.	Low. Not observed during detailed surveys of the Manzana Project area and trapping surveys in the project area.

[a] **Status Codes**:

Federal
BCC = U.S. Fish and Wildlife Service Birds of Conservation Concern
FE = Federally listed, endangered: species in danger of extinction throughout a significant portion of its range
FT = Federally listed, threatened: species likely to become endangered within the foreseeable future
BLM = BLM Sensitive (Species that require special management consideration to avoid potential future listing under the FESA and that have been identified in accordance with procedures set forth in BLM Manual section 6840 (BLM, 2008) Note that no plants that occur in the project area are identified as Sensitive in the West Mojave Plan
WEMO = Species considered in the West Mojave Plan

State
SE = State listed as endangered
ST = State listed as threatened
CSC = California Species of Special Concern
CFP = CDFW fully protected species
WL = State Watch List species

Sources: Sapphos, 2011a; CDFW, 2013

Amphibians

Two special-status amphibian species were identified as potentially occurring in the region of the project: the Tehachapi slender salamander (a state threatened species and a BLM sensitive species) and the yellow-blotched salamander (a California species of special concern and BLM sensitive species) (Sapphos, 2011a; Sapphos, 2011b CDFW, 2013; USFWS, 2013). Detailed surveys were conducted for these two species in suitable habitat within the Manzana Project study area, and neither species was observed during the detailed surveys. Additionally, habitat was not identified on-site during reconnaissance-level surveys for the Proposed Action. Based on the results of these surveys, as well as a literature review, agency coordination, and consultation with experts, it has been determined these two special-status amphibian species are unlikely to occur on the project area. The Proposed Action, therefore, has a low potential to impact these species.

Reptiles

Two special-status reptile species were identified as potentially occurring in the project area: the desert tortoise (a federally and state-listed threatened species) and the coast horned lizard (a state species of special concern and BLM sensitive species) (Sapphos, 2011a; Sapphos, 2011b CDFW, 2013; USFWS, 2013). These species are described below.

Desert Tortoise

The desert tortoise (*Gopherus agassizii*) is an herbivorous reptile that occurs in the Mojave and Sonoran deserts in southern California, southern Nevada, Arizona, and the southwestern tip of Utah in the U.S., as well as Sonora and northern Sinaloa in Mexico. The designated Mojave population of the desert tortoise includes those animals living north and west of the Colorado River in the Mojave Desert of California, Nevada, Arizona, and southwestern Utah, and in the Sonoran (Colorado) Desert in California.

The desert tortoise occupies a variety of habitats from flats and slopes typically characterized by creosote bush scrub at lower elevations to rocky slopes in blackbrush scrub and juniper woodland ecotones (transition zone) at higher elevations. Throughout most of the Mojave Desert, tortoises occur most commonly on gently sloping terrain with sandy-gravel soils and where there is sparse cover of low-growing shrubs, which allows establishment of herbaceous (non-woody) plants. However, surveys at the Nevada Test Site revealed that tortoise sign (e.g., scat, burrows, tracks, shells) was more abundant on upper alluvial fans and low mountain slopes than on the valley bottom. Soils must be friable (easily crumbled) enough for digging burrows, but firm enough so that burrows do not collapse. During the winter, tortoises will opportunistically use burrows of various lengths, deep caves, rock and caliche crevices, or overhangs for cover. Neonate desert tortoises use abandoned rodent burrows for daily and winter shelter; these burrows are often shallowly excavated and run parallel to the surface of the ground.

As a result of an initial determination that habitat suitable to support the desert tortoise was present within the project area, protocol surveys for desert tortoise were undertaken on 1,207 acres during the fall of 2011. In accordance with protocols recommended by the USFWS, surveys provided 100 percent visual coverage of suitable habitat within the project survey area.

Survey results for desert tortoise in the project area were negative. Desert tortoise sign was detected east of the Manzana Project study area. Additionally, an active burrow located six miles to the east and two separate live tortoise sightings approximately five miles to the east (Sapphos, 2011a). Therefore, while no desert tortoises were identified in the project area, there is a low potential for tortoises to move into the area due to available habitat and the relatively close proximity of known occurrences.

Coast Horned Lizard

The coast horned lizard (*Phrynosoma blainvillii*) is relatively large horned lizard that inhabits a wide variety of habitats; however, it is most commonly found in sandy washes with scattered, low bushes. The coast horned lizard's range extends from northern California to the tip of Baja California. The subspecies found in southern California, *blainvillii,* is distributed throughout the foothills and coastal plains from Los Angeles area to northern Baja California. It frequents areas with abundant, open vegetation such as chaparral or coastal sage scrub.

Suitable habitat for the coast horned lizard exists in the Mojavean juniper woodland and scrub and non-native grassland vegetation communities within the project area. The species was identified in an approximately 1,000-acre area in the northwest corner of the MWEP study area. This species has the potential to be present throughout the project area.

Avian Species

Several special-status avian species were identified as potentially occurring in the Manzana Project study area, which is considered representative of the project area. As previously indicated, surveys for avian species included directed presence/absence surveys and counts of winter raptors, spring and fall migration surveys, raptor nest surveys, and songbird surveys.

Cooper's Hawk

The Cooper's hawk (*Accipiter cooperii*) is a state Watch List species that typically nests in forested habitats and may occur as a resident or migrant in the vicinity of the Antelope Valley. During field surveys, Cooper's hawk was observed over-wintering within shrub habitats within the Manzana Project study area. No nests were identified in the project area; however, project area woodlands may provide perches and foraging habitat for this species. This species was observed in surveys for resident raptors during the winter and in migratory spring and fall surveys. Many individuals were reported to have moved in a southerly direction at low altitudes (i.e., less than 400 feet) through canyon bottoms, dry washes, and Joshua tree habitat. The peak of migration during surveys conducted in fall 2005 was late September, when as many as four to six birds were observed moving through the area.

Sharp-shinned Hawk

Sharp-shinned hawk (*Accipiter striatus*) is a state Watch List species. The species is not known to breed in Southern California but is present during fall and spring migration through the Antelope Valley. Several sharp-shinned hawks were observed during the various studies in the Manzana Project study area. Due to a lack of suitable over-wintering habitat in the project area,

potential use of the area is expected to be low. This species may occur within the project area as a migrant, albeit in low densities.

Golden Eagle

The golden eagle (*Aquila chrysaetos*) is a USFWS Bird of Conservation Concern, BLM Sensitive Species, and a state fully protected species. This species is an uncommon permanent resident and migrant throughout much of California and is somewhat common in southern California. Habitat typically includes rolling foothills, mountain areas, sage-juniper flats, and desert. Golden eagles eat mostly small mammals such as rabbits and other rodents, but will eat other mammals, birds, reptiles, and some carrion. This species needs open terrain for hunting such as grasslands, deserts, savannahs, and early successional stages of forest and shrub habitats. Golden eagles are known to nest and forage within the higher elevations of the mountainous terrain within the TWRA. While observations of foraging and nesting individuals have typically been more numerous at higher-elevation project sites in the Tehachapi and Piute Mountains, golden eagles have been recorded during avian use surveys at the majority of proposed wind developments evaluated in the region in recent years.

The habitat assessment conducted for the project determined that all plant communities in the project area provide suitable resting and foraging habitat for golden eagle. No golden eagles were observed during the Bird Use Counts conducted December 2011 to November 2012 (Sapphos, 2013). However, surveys from the Manzana Project area did find golden eagles using the general area throughout the year (Sapphos, 2013). While no nests were identified within the project area of either Manzana or Tylerhorse, observations clearly indicate that the general area contains and supports resident eagles. Resident golden eagles from nearby areas were observed foraging in the project area in 2004, 2005, 2011, and were observed in the project area during spring and fall migration (Sapphos, 2011 and 2013). Migrants in fall were generally observed flying above 1,000 feet, whereas the more numerous resident birds frequently foraged lower over Joshua tree woodland and other habitats in the project area. During fall migration surveys conducted for Manzana, 474 survey hours resulted in 45 golden eagle observations. There were 11 observations of golden eagles in 198 observation hours of spring migration. Winter surveys documents wintering eagles in the area in addition to the presumed resident eagles (Sapphos , 2013). Additionally, data records from the CNDDB and West Mojave Plan show golden eagle nest sites approximately 20.5 miles southwest and 16.5 miles northeast of the project area, respectively (CDFW, 2013). It is expected that golden eagles may occur in the project area where they are anticipated to be an uncommon year-round, non-breeding visitor or non-breeding resident.

A nesting golden eagle pair was observed by Bloom Biological, Inc. during directed surveys for raptor nests for the Manzana Project study area in July and August 2004, approximately 4.3 miles west of the northwestern corner of the project area. However, the exact location of this nest could not be confirmed. Subsequent aerial surveys conducted for nesting golden eagles in May 2010 by Sapphos Environmental, Inc. within a large geographic area that included the area surveyed by Bloom Biological, Inc. failed to detect golden eagle nests in the area reported by Bloom Biological, Inc.

Based on the findings of three aerial surveys performed in 2010 and 2011, no golden eagle nests were identified within 10 miles of the project area, and the nearest active golden eagle nest was approximately 15 miles west of the project area (see Appendix C-1, pg. 5-22).

Burrowing Owl

Burrowing owl is a federal Bird of Conservation Concern, a BLM Sensitive Species, and a state Species of Special Concern. The burrowing owl is a species of open, dry grassland, prairie, and desert habitats. It is also found in grass, forb, and open shrub stages of pinyon-juniper and ponderosa pine habitats as well as agricultural lands. This small owl is found throughout California in appropriate habitats. In the western United States, burrowing owls are rarely known to construct their own burrows, and this species is strongly associated with burrowing mammals such as ground squirrels. The majority of burrows used by burrowing owls in California are originally constructed by ground squirrels, but the species will also occupy man-made niches such as banks and ditches, piles of broken concrete, and abandoned structures. The burrowing owl is migratory over much of its range, even in southern California, but burrowing owls also overwinter throughout California. Burrowing owl numbers have been markedly reduced in California for at least the past 60 years. Direct human-caused mortality (including vehicle collisions), pesticides (including chemical eradication of ground squirrels), habitat degradation and loss, and predators are all known threats to burrowing owls. Burrowing owls are known to occur in lower elevations of the TWRA.

This species was observed over-wintering within grassland and open shrub habitats in the project area, but nesting has not been observed in the project area (Sapphos, 2011a). A burrow with owl sign (whitewash) was noted on-site during desert tortoise protocol surveys in spring 2005. Four burrowing owls and three owl burrows were observed during focused surveys in fall 2011 (Sapphos, 2011a; Appendix C-1, pg. 5-24). Based on these findings and the presence of suitable habitat throughout, burrowing owls are considered present in the project area.

Ferruginous Hawk

The ferruginous hawk (*Buteo regalis*) is a state Watch List species. America's largest hawk, this species primarily inhabits open country, including prairies, plains, and badlands. This species breeds in trees near streams or on steep slopes, and sometimes on mounds in open desert. Although this species does not breed in Southern California, it is commonly observed wintering in the Antelope Valley. In 2005, 23 ferruginous hawk observations were made in and near the project area during winter surveys, and during spring and fall raptor migration surveys, with approximately five individual hawks hunting over the project vicinity in winter (Sapphos, 2011a). This species may be intermittently present in the project area from early fall to early spring.

Swainson's Hawk

Swainson's hawk (*Buteo swainsoni*) is a federal Bird of Conservation Concern, a state threatened species, and a BLM Sensitive Species. Swainson's hawks are known to migrate in flocks with as many as several hundred birds. Historically, this species' breeding range in California included the Great Basin (including the Modoc Plateau); the Sacramento and San Joaquin Valleys; along the coast in Marin, Monterey, Ventura, Los Angeles, and San Diego counties; and a few scattered

sites in the Colorado and Mojave deserts. Today, Swainson's hawks still nest in most previously occupied regions of the state, but the number of breeding birds has been greatly reduced throughout major portions of the range (e.g., Central Coast Ranges), and the species has been extirpated in coastal southern California. Only the Central Valley and Modoc Plateau still support more than a few isolated pairs. In California, migrating flocks of up to 100 or more Swainson's hawks may be observed away from the major mountain ranges during the spring and fall. These observations have become less frequent as the overall population has declined. About 30 birds have wintered in the Sacramento-San Joaquin River Delta annually since 1991 and are the only confirmed regularly wintering population in California.

The natural foraging habitat of Swainson's hawks is relatively open stands of grass-dominated vegetation and relatively sparse shrublands. Trees are typically widely scattered or found in bands along riparian corridors. Much of the original habitat has been converted to either urban development or cultivated agricultural uses. Swainson's hawks can forage agricultural fields with many types of crops. However, some studies have found that this species is more abundant in areas of moderate agricultural development than in either grassland or areas of extensive agricultural development. Alfalfa fields are routinely used by foraging Swainson's hawks. Orchards and vineyards in general are not suitable foraging habitat for Swainson's hawk due to the dense woody cover.

Breeding Swainson's hawks have three general habitat requirements: 1) suitable foraging habitat with adequate prey, 2) nest sites, and 3) isolation from disturbances that may disrupt breeding activities. The primary nest trees in the western Mojave Desert are Joshua trees and Fremont cottonwoods, but other large trees could also be used, especially where planted in narrow bands such as agricultural windbreaks. In both the West Mojave Planning Area and the Eastern Mojave National Preserve, Swainson's hawks forage on suitable prey within the Joshua tree woodlands. In addition, agricultural areas with suitable crop types and located in proximity to nest sites may meet Swainson's hawk foraging requirements.

All documented nesting attempts by Swainson's hawks in the west Mojave Desert are in the Antelope, Victor, and Apple valleys from near Palmdale and Lancaster to Adelanto and Victorville. Within this range, they nest in extremely low densities and apparently not in all years in desert scrub vegetation with an overstory of Joshua trees and in Fremont cottonwoods and other large trees along stream courses or planted as windbreaks. A small breeding population of Swainson's hawk has been documented in the Antelope Valley over the last several years.

The scrub and grassland habitats within the project area provide suitable foraging habitat during the spring and fall Swainson's hawk migration. Migration surveys conducted in the Manzana Project study area verified that Swainson's hawk migrates through the project property and surrounding area during the fall and spring migration over a short window of time. During 2005 fall migration surveys, 48 birds were observed and at least 35 individuals were reported flying below 330 feet above ground level (AGL) (Sapphos, 2011a). Although known to nest at other locations in the Antelope Valley, the detailed on-site surveys did not locate active or inactive nests in the project area. As a result, Swainson's hawk is not considered a resident bird in the

project area (Sapphos, 2011a).

Vaux's Swift

Vaux's swift (*Chaetura vauxi*) is a state Species of Special Concern. This migratory species is known to sporadically occur in Kern County, and several hundred individuals were observed during various field surveys project area during spring and fall migrations. Thus, Vaux's swift is expected as a sporadically uncommon to common migrant in the project area.

Northern Harrier

Northern harrier (*Circus cyaneus*) is a state Species of Special Concern. The northern harrier inhabits saltwater and freshwater marshes, agricultural lands, grasslands, desert sinks and woodlands, and occasionally brush lands and mountain meadows. Northern harriers were observed in the project area during raptor surveys and are believed to be a winter resident species (Sapphos, 2011a). Most northern harriers observed were flying below 30 feet, which would be a typical foraging height (Sapphos, 2011a), but the species flies higher during migration, primarily over 1,000 feet AGL (Kerlinger, 1989).

White-tailed Kite

White-tailed kite (*Elanus leucurus*) is a state fully protected species and a BLM Sensitive Species. While this species may have once been predominantly distributed in marshes or grasslands, white-tailed kites are now found in a larger variety of habitats within the coastal plains and low foothills, including riparian woodlands and groves of oak and/or sycamore, bordering open fields or grasslands, cultivated lowlands or orchards, and even some suburban habitats. During site surveys, a single kite was observed near the project area in November 2005; flying over grassland at an elevation of 100 feet (Sapphos, 2011a). Nesting habitat does not occur near the project area; however, this species may infrequently forage within or traverse the project area.

Merlin

Merlin (*Falco columbarius*) is a state Watch List species. This small, uncommon falcon breeds outside of California, yet is known as a regular visitor to the Antelope Valley. This species has been observed in limited numbers during various surveys of the project area, but no nests have been identified in the project area. All of the merlin observations occurred during fall and spring migration through the Antelope Valley, suggesting low use of the project property (Sapphos, 2011a). Thus, this species is likely to be present in the project area, albeit in low numbers.

Prairie Falcon

The prairie falcon (*Falco mexicanus*) is a federal Bird of Conservation Concern and a state Watch List species. Prairie falcons are a desert and grassland species that nest in cliffs and prey mainly on birds and squirrels. This species is commonly observed foraging in the Antelope Valley throughout the year and is present during spring and fall migration throughout the Antelope Valley. No nests were identified during field surveys conducted for the Manzana Project study area, but the prairie falcon was observed foraging within most habitats within the project area

during both the winter raptor surveys and the spring and fall migratory surveys.

American Peregrine Falcon

The American peregrine falcon (*Falco peregrinus*) is a federal Bird of Conservation Concern and a state fully protected species. The species often migrates individually through the project area and the Antelope Valley during the fall and spring. There are limited records of peregrine falcons in Kern County. The scrub and grassland habitats within the project area provide suitable foraging habitat during migration. Avian surveys in the project area verified that peregrine falcons migrate through the project area during a short window of time during fall and spring migrations. A single peregrine falcon was observed flying at above 500 feet AGL during the fall 2005 survey (Sapphos, 2011a). There are no records for nesting American peregrine falcons in the Tehachapi Mountains.

California Condor

The California condor (*Gymnogyps californianus*) is a federally-listed endangered and state-listed endangered and fully protected species. At the time of western settlement in North America, the condor range was limited to a narrow Pacific coastal strip extending from British Columbia, Canada to Baja California Norte (USFWS, 1996). The California condor experienced a steady population decline during the 20th century that was primarily related to factors including loss of habitat, low reproductive rate, poisoning, and shooting. By the 1980s, the condor range in California was restricted to a wishbone-shaped area encompassing six (6) counties just north of Los Angeles (USFWS, 1996). In 1982, fewer than 25 individuals remained in the wild and in 1987 the last remaining wild condors were taken into captivity. In 1992 the first reintroductions into the wild of captive-bred birds began, and reintroductions continue today. As of April 30, 2011, the wild condor population in California numbered 106 individuals. The southern California flock, which is the flock nearest the project area, consisted of 34 free-flying released adults, 10 wild-fledged birds, and 3 chicks in wild nests for a total of 47 birds (USFWS, 2012).

Condors are intensively monitored by the USFWS, with half of the wild California population tracked using GPS transmitters. Such tracking provides some indication of condor use areas, but because many birds are not tracked, the current distribution of condors is considered larger than what is indicated by mapped GPS locations. However, the tracked birds give a general indication of areas of high condor use, as well as areas that condors forage in less frequently. Further, these data, when viewed over the last 10 years, indicate that the wild condor population is expanding throughout their former range.

California condors are not known to occur within the project area. However, the historic range of the California condor is located approximately 2.2 miles to the northwest of the project area. In Kern County, condors forage extensively in the foothills adjacent to the northern boundary of the Los Padres National Forest, to Reyes Station in the west, to the Pleito Hills west of Interstate 5, and eastward throughout much of the region from the Tehachapi Mountains (including Tejon Ranch) north to the slopes of Cummings Mountain (Appendix C-1, pg. 5-24).

Another important foraging area in Kern County was the foothill rangelands around Glennville,

where condors foraged daily in the Cedar Creek and upper Pozo Creek drainages as far west as Blue Mountain and the old Granite Station crossroads south of Woody. Condors roosted primarily on Sequoia National Forest lands in the Greenhorn Mountains (USFWS, 1996). There are no known nesting sites within the project area or the Tejon Ranch Critical Habitat Unit (CHU). All recent California condor nest sites in Southern California are located on public lands within the Los Padres, Angeles, and Sequoia National Forests. No cliffs or large trees of the size required by California condors occur in the project area or within the Tejon Ranch CHU.

Daily foraging flights of California condors may occur over vast areas encompassing hundreds of miles of travel (Meretsky and Snyder, 1992). Condors are highly gregarious at feeding sites and somewhat social during foraging flights. Daily foraging flights of California condors typically range from 31 to 44 miles from an active nest or roost site; the longest recorded flight has been 141 miles (USFWS, 1996). However, compared with critical habitat functions and values associated with nesting and roosting, foraging, particularly with today's captive released population, is much more subject to management through the provision of clean food sources (carcasses) in suitable locations. Condors have repeatedly demonstrated that they will locate and feed on carcasses provided throughout their historical range, including the Tejon Ranch critical habitat area. Based on the analysis conducted on condors fitted with GPS transmitters from 2008 to 2010, condors generally only used those areas within the Tejon Ranch critical habitat boundary that historically contained, and currently contain, animal carcasses, and supplemental feeding areas.

The currently defined range in California includes some areas of Southern and central California, where they are primarily restricted to chaparral, coniferous forest, and savanna habitats (USFWS, 1996). The preponderance of sighting and tracking data in the Tehachapi Mountains and southern Sierras of Kern County since 1992 are concentrated west and north of the Garlock Fault. Newly released birds venturing into the Tejon Ranch region and the Tehachapi Mountains are concentrated within their historical range, particularly into areas west and north of the Garlock Fault. Released condors in Southern California have largely confined their movements within 30 to 37 miles from the Sespe Condor Sanctuary in Ventura County (Sapphos, 2011a).

However, a small proportion (estimated at less than 3 percent) of sighting and tracking data occurs east and south of the Garlock Fault, but within the physiographic province of cismontane California in the Tehachapi Mountains, which coincides with the historical range of the California condor. None of the captive released birds have established populations in the Blue Ridge condor area, Kern County rangelands, and Tulare County rangelands (Walters et al., 2008). In addition, few observations of California condors have occurred east and south of the Garlock Fault at the eastern end of the Tehachapi Mountains, within the TWRA, the Town of Tehachapi, or the Tehachapi Pass, which is also confirmed by the absence of sightings by annual bird counts from this region (Sapphos, 2011a). No condor sightings have occurred southeast of this area within or adjacent to the project area. The nearest known observation of a California condor is that of a radio-tagged bird in summer 2010 located approximately 3.9 miles west of the project area (Sapphos, 2011a). The condor's potential to occur in or near the project area is considered low because the project area supports marginal foraging habitat, lacks available nesting sites, and

lacks traditional and temporary roost sites for overnight and diurnal roosting locations.

Loggerhead Shrike

The loggerhead shrike (*Lanius ludovicianus*) is a federal Bird of Conservation Concern and state Species of Special Concern. This species typically occurs within lowlands and grasslands throughout California. They prefer open habitats with scattered shrubs, trees, posts, fences, and other perches. All of the shrub plant communities in the project area provide suitable nesting habitat for this species. Loggerhead shrikes were observed during numerous surveys of the project area, with the detection of approximately 10 to 15 breeding individuals (Sapphos, 2011a), and are a year-round resident of the project area.

American White Pelican

The American white pelican (*Pelecanus erythrorhynchos*) is a state Species of Special Concern. This species breeds primarily on isolated islands in freshwater lakes and forages on inland marshes, lakes, or rivers, favoring shallow water. American white pelicans were observed in the Manzana Project study area during several surveys conducted for migratory raptors. Most of these soaring migrants were observed in large flocks (i.e., 50 to 100 birds) at low altitudes (approximately 200 feet) in spring and in large flocks (i.e., 50 to 100 birds) at both low and high altitudes (greater than 1,000 feet) in fall. Therefore, this species is likely to migrate through the project area (Sapphos, 2011a).

Le Conte's Thrasher

Le Conte's thrasher (*Toxostoma lecontei*) is a federal Bird of Conservation Concern and state Species of Special Concern. This species can be found in low mixed desert scrub habitats and desert wash areas. Suitable habitat for the species exists within the Mojave Desert wash scrub, Mojavean juniper woodland and scrub, and Joshua tree woodland plant communities within the project area. Based on detailed field surveys, Le Conte's thrasher was identified as a year-round resident in the project area.

Mammals

Four terrestrial special-status mammals were identified in the project region: southern grasshopper mouse (*Onychomys torridus*), San Joaquin pocket mouse (*Perognathus inornatus*), American badger (*Taxidea taxus*), and Mohave ground squirrel (*Xerospermophilus* (=*Spermophilus*) *mohavensis*). These species and special-status bats are discussed below.

Southern Grasshopper Mouse

Southern grasshopper mouse is a state Species of Special Concern that is common in desert habitats of the Mojave Desert and southern Central Valley. The species prefers alkali desert scrub and desert scrub habitats, with somewhat lower densities expected in other desert habitats, including succulent scrub, was, and riparian areas. This species also occurs in coastal scrub, mixed chaparral, sagebrush, low sage, and bitterbush habitats. During small mammal trapping efforts in May 2010, Sapphos Environmental, Inc. recorded 10 southern grasshopper mice captures at traps in juniper desert scrub (5 captures), Joshua tree woodland (3 captures), and non-

native grassland (2 captures) vegetation communities. This species is considered present throughout the project area.

San Joaquin Pocket Mouse

San Joaquin pocket mouse is a BLM Sensitive Species and was previously a CDFW Species of Special Concern. This nocturnal mouse inhabits dry, open grasslands or scrub areas with fine-textured soils. Small mammal trapping in May 2010 resulted in three San Joaquin pocket mouse captures, all within Joshua tree woodland habitat, perhaps representing the same individual (Sapphos, 2011a). Based on the broad availability of suitable habitat, this species likely occurs throughout the project area.

American Badger

The American badger is a state Species of Special Concern. This species typically prefers dry, open shrub grasslands, and forests. All of the plant communities within the project area provide potential habitat for this species. One badger was observed at the Manzana Project site, and suitable habitat is believed to occur throughout the project area.

Mohave Ground Squirrel

The Mohave ground squirrel is a BLM Sensitive and a state threatened species. They are endemic to the western Mojave Desert and occur in portions of Inyo, Kern, Los Angeles and San Bernardino counties. The Mohave ground squirrel ranges from near Palmdale on the southwest to Lucerne Valley on the southeast, Olancha on the northwest and the Avawatz Mountains on the northeast.

The Mohave ground squirrel occupies all major desert scrub habitats in the western Mojave Desert. It has been observed in habitats such as Mojave creosote scrub, desert saltbush scrub, desert sink scrub, desert greasewood scrub, shadscale scrub, and Joshua tree woodland. These habitat types are distributed throughout the range of the Mohave ground squirrel. In the northern portion of its range, it is found in a plant association described as Mojave mixed woody scrub, typically occurring on hilly terrain and composed of a variety of shrub species.

The Mohave ground squirrel inhabits flat to moderate terrain and is not generally found in steep contours. However, juveniles can apparently traverse steep terrain during dispersal. The species has been found most frequently in sandy, alluvial soils, but is also found in gravelly and occasionally rocky soils. It is not known to occupy areas of desert pavement.

A habitat assessment identified non-suitable habitat for the Mohave ground squirrel in the project area; therefore, surveys were not conducted for this species. Detailed field surveys were conducted for the Manzana Project following CDFW survey protocols, with negative survey findings. Based on the results of literature review, agency coordination, consultation with experts, and detailed field surveys within the Manzana Project study area, it has been determined that this species is likely absent from the project area (Sapphos, 2011a).

Bats

Four (4) special-status bat species were identified as potentially occurring in the project area, all of which may be considered resident species: western mastiff bat and pallid bat, which are both state Species of Special Concern and BLM Sensitive species; and the Yuma myotis and western small-footed myotis, which are BLM Sensitive species.

The CNDDB does not report any bat roosts in the project region (CDFW, 2013); however, due to the inherent difficultly in detecting bat roosts and the specialized equipment and training that are required to detect and identify bats, roosting sites are believed to be considerably more widespread represented in the database. Habitat assessment surveys did not detect any potential bat roosts in the project area, though it was determined that trees and rock crevices within the project area and surrounding region may provide suitable roosting habitat for resident and migratory sensitive bat species. Additionally, it was determined that habitat potentially suitable to support foraging for migratory bats during the spring and fall migration is also present. Bats were also observed using a thermal imaging camera, although identification to species was not possible (Sapphos, 2011a).

3.22.2 Applicable Regulations, Plans, and Standards

Federal

National Environmental Policy Act

The National Environmental Policy Act (NEPA) (42 U.S.C. 4321 et seq.) declares a continuing federal policy that directs "a systematic, interdisciplinary approach" to planning and decision-making and requires environmental statements for "major Federal actions significantly affecting the quality of the human environment." Implementing regulations by the Council on Environmental Quality (CEQ) (40 CFR Parts 1500-1508) requires federal agencies to identify and assess reasonable alternatives to proposed actions that will restore and enhance the quality of the human environmental 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. The BLM is the Lead Agency under NEPA for the TWP.

Federal Endangered Species Act

The federal ESA and subsequent amendments designates threatened and endangered animals and plants and provides measures for their protection and recovery. "Take" of listed animal species and of listed plant species is prohibited without obtaining a federal permit. Take is defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct." Harm includes any act that actually kills or injures fish or wildlife, including significant habitat modification or degradation that significantly impairs essential behavioral patterns of fish or wildlife. Activities that damage the habitat of (i.e., harm) listed wildlife

species require approval from the USFWS for terrestrial species. The ESA also generally requires determination of critical habitat for listed species.

For projects proposed on federal lands, federal agencies such as the BLM are required by the FESA to ensure that any action they authorize, implement, or fund, including energy developments, will not jeopardize the continued existence of any federally threatened or endangered species or destroy or adversely modify designated critical habitat. Under FESA Section 7 consultation, the lead agency (e.g., BLM) prepares a Biological Assessment (BA) that analyzes whether the project is likely to affect a listed wildlife or plant species or their critical habitat. If the action would adversely affect the species it proposes suitable avoidance, minimization, or compensatory mitigation measures, and the USFWS then analyzes the effects to the species addressed in the BA and issues its Biological Opinion (BO) determining whether the project is likely to jeopardize the species or result in adverse modification of critical habitat.

If a "non-jeopardy" or "no adverse modification" opinion is provided by the USFWS, the federal agency may proceed with the action as proposed. If a jeopardy or adverse modification opinion is provided, the USFWS may prepare a BO with reasonable and prudent measures to minimize take and associated mandatory terms and conditions that describe the methods for accomplishing these prudent measures and/or also develop mandatory reasonable and prudent alternatives to the proposed action.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (16 U.S.C. 703 through 711) (MBTA) is the domestic law that affirms, or implements, the United States' commitment to four (4) international conventions (with Canada, Mexico, Japan, and Russia) for the protection of a shared migratory bird resource. The MBTA makes it unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, or kill migratory birds. The law also applies to the removal of nests occupied by migratory birds during the breeding season. The MBTA makes it unlawful to take, pursue, molest, or disturb these species, their nests, or their eggs anywhere in the United States.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (16 U.S.C. 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. Take of bald and golden eagles is defined as follows: "disturb means to agitate or bother a bald or 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.'' (72 FR 31132; 50 CFR 22.3)

BLM Policy on Bald and Golden Eagles

In September 2011, the BLM issued an Instruction Memo (IM) (No. 2010-156) to provide direction for renewable energy NEPA analyses to comply with the Bald and Golden Eagle

Protection Act, including its implementing regulations (i.e., September 11, 2009, 50 CFR parts 13 and 22) for golden eagles, and to identify steps that may be necessary within the habitat of golden eagles to ensure environmentally responsible authorization and development of renewable energy resources. The IM requires that consideration of potential impacts to golden eagles or their habitat is incorporated into the NEPA analysis for all renewable energy projects to document whether breeding territories/nests, feeding areas, roosts, or other important golden eagle use areas are located within the analysis area. The guidance document requires that findings of "no impact" are documented in the affected environment portion of the NEPA analysis, and stipulates additional requirements if the proposed project or action has the potential to impact golden eagles or their habitat.

Bureau of Land Management Sensitive Species

BLM Sensitive Species are species designated by the State Director that are not already federally listed, proposed, or candidate species, or state-listed because of potential endangerment. 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." Each state office of the BLM maintains a list of special-status wildlife species that are to be considered as part of the management activities carried out by the BLM on the lands that they administer.

California Desert Conservation Area Plan

The CDCA Plan of 1980 covers 25 million acres of land in southern and southeastern California, with 10 million acres being administered by the BLM. The CDCA Plan is a comprehensive, long-range plan with goals and specific actions for the management, use, development, and protection of the resources and public lands within the CDCA and is based on the concepts of multiple use, sustained yield, and maintenance of environmental quality.

The multiple use classes comprise the backbone of the CDCA Plan, essentially zoning the CDCA into four (4) major use categories, as a city or county is zoned for land use classes. The CDCA Plan categories include four million acres of Class C (controlled) lands (including roughly 3,600,000 acres of wilderness areas created under the 1994 California Desert Protection Act) to be preserved in a natural state with access generally limited to non-motorized, non-mechanized means; four million acres of Class L (limited use) lands, providing for generally lower intensity, carefully controlled uses that do not significantly diminish resource values; 1.5 million acres of Class M (moderate use) lands designated for mining, livestock grazing, recreation, energy, and utility development with mitigation required for any damage caused by permitted uses; and 500,000 acres of Class I (intensive use) lands managed for concentrated uses with reasonable protection provided for sensitive natural values and mitigation of impacts and rehabilitation of impacted areas occurring when possible (BLM, 1999).

The Plan's goals and actions for each resource are established in its 12 elements including the Vegetation Element and the Energy Production and Utility Corridors Element, among several others (BLM, 1999). There have been amendments to the 1980 Plan, including the West Mojave Plan (WEMO). The TWP falls within the planning boundaries of the WEMO, which is described below.

West Mojave Plan

The WEMO is a HCP pursuant to the federal ESA and an approved amendment to the CDCA Plan covering over 9 million acres in five (5) counties with the purpose of creating a comprehensive strategy to conserve and protect the desert tortoise, the Mohave ground squirrel, and nearly 100 other sensitive species, as well as the natural communities in which they reside. The 9,359,070-acre planning area includes 3,263,874 acres of BLM-administered public lands; 3,029,230 acres of private lands; and 102,168 acres of lands administered by the State of California within portions of Inyo, Kern, Los Angeles, and San Bernardino counties.

In March 2006, the BLM issued a Record of Decision (ROD) for the WEMO Final Environmental Impact Statement. However, the ROD addressed only the BLM's amendment to the CDCA Plan, and it did not include actions proposed by State and local governments for non-federal lands. The HCP has not been completed and would require greater specificity for local governments to obtain incidental take permits under the State and federal ESAs.

The WEMO area in Kern County begins at the intersection of Kern, Inyo, and San Bernardino Counties northeast of Ridgecrest, California. The area follows the Sierra Nevada Mountain Range to the southwest and continues to the Tehachapi Mountains and then to the Los Angeles County line east-northeast of Quail Lake. The TWP falls within the boundaries of the WEMO and BLM lands within the project area are subject to the provisions of the WEMO as an amendment to the CDCA Plan.

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

Approved on May 18, 2001, Executive Order 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.

Draft Voluntary, Land-Based Wind Energy Guidelines

The USFWS has been working over the last decade to develop guidelines to assist in the planning and implementation of wind development projects in compliance with the federal ESA, MBTA, and Bald and Golden Eagle Protection Act. In July, 2003, the USFWS released a set of voluntary, interim guidelines for reducing adverse effects to fish and wildlife resources from wind energy projects. The USFWS Wind Turbine Guidelines Advisory Committee (WTGAC) was

then established to revise the guidelines in light of public comments and new data from ongoing studies. On March 4, 2010, the WTGAC submitted their *Recommended Guidelines – Recommendations on developing effective measures to mitigate impacts to wildlife and their habitats related to land-based wind facilities* (USFWS, 2010) to the Secretary of the Interior. The WTGAC guidelines include both policy recommendations and recommended voluntary guidelines for siting and operating wind energy projects in order to avoid or minimize potential impacts to wildlife, principally migratory birds and bats, and habitat. The USFWS convened an internal working group to review the WTGAC guidelines and develop voluntary draft "land-based" wind energy guidance. These land-based guidelines were released on February 8, 2011 as the *Draft Voluntary, Land-Based Wind Energy Guidelines* (USFWS, 2012).

The Recommendations and the Draft Guidelines are founded upon a "tiered approach" for assessing potential impacts to wildlife and their habitats (USFWS, 2012), as follows:

1. Tier 1 – Preliminary evaluation or screening of potential sites (landscape-level screening of possible project sites)
2. Tier 2 – Site characterization (broad characterization of one (1) or more potential project sites)
3. Tier 3 – Pre-construction monitoring and assessments (site-specific assessments at the project site)
4. Tier 4 – Post-construction monitoring studies (to evaluate direct fatalities and other impacts)
5. Tier 5 – Research (to further evaluate direct and indirect effects, and assess how they may be addressed)

These guidelines provide recommended methods and metrics to help answer the questions posed at each tier, while recognizing the substantial variability that exists between project sites. Other elements include a full discussion of mitigation policies and principles; the applicability of adaptive management, including the potential use of operational modifications; and considerations related to cumulative impacts, habitat fragmentation, and landscape-level analysis (USFWS, 2012).

Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act (FWCA) (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. The FWCA is not applicable to the Proposed Action.

State Regulations

California Endangered Species Act

The California ESA establishes the policy of the State to conserve, protect, restore, and enhance threatened or endangered species and their habitats. Unlike the federal ESA, state-listed plants

have the same degree of protection as wildlife, but insects and other invertebrates may not be listed. Take is defined similarly to the federal ESA, and is prohibited for both listed and candidate species. Take authorization may be obtained by a project proponent from CDFW under California ESA §2081. Pursuant to §2081 of the California Fish and Game Code (FGC), the CDFW may authorize individuals or public agencies to import, export, take, or possess, and State-listed endangered, threatened, or candidate species. These otherwise prohibited acts may be authorized through permits or a Memorandum of Understanding (MOU) if: (1) the take is incidental to an otherwise lawful activity, (2) impacts of the authorized take are minimized and fully mitigated, (3) the permit is consistent with any regulations adopted pursuant to any recovery plan for the species, and (4) the project proponent ensures adequate funding to implement the measures required by the CDFW. The CDFW makes this determination based on available scientific information and considers the ability of the species to survive and reproduce.

California Fish and Game Code

Sections 3511, 4700, 5050, and 5515 of the FGC outline protection for fully protected species of mammals, birds, reptiles, amphibians, and fish. Species that are fully protected by these sections may not be taken or possessed at any time. CDFW cannot issue permits or licenses that authorize the "take" of any fully protected species, except under certain circumstances such as scientific research and live capture and relocation of such species pursuant to a permit for the protection of livestock. Furthermore, CDFW is responsible to maintain viable populations of all native species. To that end, the CDFW has designated certain vertebrate species as Species of Special Concern because declining population levels, limited ranges, and/or continuing threats have made them vulnerable to extinction.

Under §§ 3503 and 3503.5 of the FGC, project proponents are not allowed to conduct activities that would result in the taking, possessing, or destroying of any birds of prey, taking or possessing of any migratory non-game bird as designated in the MBTA or the taking, possessing, or needlessly destroying of the nest or eggs of any raptors or non-game birds protected by the MBTA, or the taking of any non-game bird pursuant to FGC §3800.

California Guidelines for Reducing Impacts to Birds and Bats from Wind Energy Development

In October 2007, the California Energy Commission (CEC) in cooperation with CDFG released a voluntary guideline document to be used by lead agencies when siting and permitting wind projects in California: *California Guidelines for Reducing Impacts to Birds and Bats from Wind Energy Development* (CEC and CDFG, 2007). These voluntary guidelines were intended to reduce impacts to birds and bats from new development or repowering of wind energy projects in California. The guidance includes recommendations on preliminary screening of proposed wind energy project sites; pre-permitting study design and methods; assessing direct, indirect, and cumulative impacts to birds and bats in accordance with State and federal laws; developing avoidance and minimization measures; establishing appropriate compensatory mitigation; and post-construction operations monitoring, analysis, and reporting methods.

Local

Kern County General Plan

The Kern County General Plan (KCGP) identifies the federal, State, and local statutes, ordinances, or policies that govern the conservation of biological resources that must be considered by Kern County (County) during the decision-making process for any project that could impact biological resources.

Land Use, Open Space, and Conservation Element.

The Land Use, Open Space, and Conservation Element of the KCGP states that the element provides for a variety of land uses for future economic growth while also assuring the conservation of County's agricultural, natural, and resource attributes. Section 1.10, General Provisions, provides goals, policies, and implementation measures that apply to all types of discretionary projects.

Section 1.10.5 – Threatened and Endangered Species

Policies

Policy 27. Threatened or endangered plant and wildlife species should be protected in accordance with State and federal laws.

Policy 28. County should work closely with State and federal agencies to assure that discretionary projects avoid or minimize impacts to fish, wildlife, and botanical resources.

Policy 29. The County will seek cooperative efforts with local, State, and federal agencies to protect listed threatened and endangered plant and wildlife species through the use of conservation plans and other methods promoting management and conservation of habitat lands.

Policy 30. The County will promote public awareness of endangered species laws to help educate property owners and the development community of local, State, and federal programs concerning endangered species conservation issues.

Policy 32. Riparian areas will be managed in accordance with USACE, and the CDFW rules and regulations to enhance the drainage, flood control, biological, recreational, and other beneficial uses while acknowledging existing land use patterns.

Implementation Measures

Implementation Measure S. Pursue the development and implementation of conservation programs with State and federal wildlife agencies for property owners desiring streamlined endangered species mitigation programs.

Chapter 5. Energy Element – 5.2 Importance of Energy to Kern County

Policies

Policy 8. The County should work closely with local, State, and federal agencies to assure that energy projects (both discretionary and ministerial) avoid or minimize direct impacts to fish, wildlife, and botanical resources, wherever practical.

Policy 9. The County should develop and implement measures which result in long-term compensation for wildlife habitat, which is unavoidably damaged by energy exploration and development activities.

Zoning Ordinance of Kern County (Title 19 of the Ordinance Code of Kern County)

Chapter 19.64 Wind Energy (WE) Combining District

The Wind Energy (WE) Combining District (Chapter 19.64) contains development standards and conditions (§19.64.140) that would be applicable to the siting and operation of WTGs. The following provisions apply to biological resources issues related to the project.

Section 19.64.120(A): No landscaping required in connection with wind-driven electrical generators.

Section 19.64.140(B): Towers and blades shall be painted a non-reflective, unobtrusive color or have a non-reflective surface.

Section 19.64.140(C): Fencing shall be erected for each wind machine or on the perimeter of the total project. Wind project facilities shall be enclosed with a minimum four- (4-) foot-high security fence constructed of four (4) strand barbed wire or materials of a higher quality. Fencing erected on the perimeter of the total project shall include minimum eighteen- (18-) inch by eighteen- (18-) inch signs warning of wind turbine dangers. Such signs shall be located a maximum of three hundred (300) feet apart and at all points of site ingress and egress. Where perimeter fencing is utilized, the Planning Director may waive this requirement for any portion of the site where unauthorized access is precluded due to topographic conditions.

Section 19.64.140(D): All on-site electrical power lines associated with wind machines shall be installed underground within one hundred fifty (150) feet of a wind turbine and elsewhere when practicable, excepting "tie-ins" to utility type transmission poles, towers, and lines. However, if project terrain or other factors are found to be unsuitable to accomplish the intent and purpose of this provision, engineered aboveground electrical power lines shall be allowed.

Section 19.64.140(H): All wind projects including wind generators and towers shall comply with all applicable County, State, and federal laws, ordinances, or regulations.

Section 19.64.140(K): Prior to the issuance of any grading permit, a plan for the mitigation of potential soil erosion and sedimentation shall be prepared by a registered civil engineer or other professional and submitted for the approval by the Director of the Engineering, Surveying, and Permit Services Department. The plan shall include provisions for site revegetation, including any necessary re-soiling, proposed plant species, proposed plant density and percentage of ground coverage, and the methods and rates of application and shall include sediment collection facilities as may be required by the Engineering, Surveying, and Permit Services Department.

The soil erosion and sedimentation control plan shall be consistent with the applicable requirements of the California Regional Water Quality Control Board pertaining to the preparation and approval of Storm Water Pollution Prevention Plans. Notwithstanding the foregoing, the revegetation portion of the soil erosion and sedimentation plan shall be prepared by a professional biologist or other professional approved, in advance, by the Engineering, Surveying, and Permit Services Department.

The plan shall include a timetable for full implementation, estimated costs, and a surety bond or other security as approved by the Engineering, Surveying, and Permit Services Department in an amount determined by that department to guarantee plan implementation. The soil erosion and sedimentation control plan, including the revegetation plan and security instrument, shall be submitted to, and approved by, the Floodplain Management Section of the Engineering, Surveying, and Permit Services Department prior to the issuance of any grading permit. The security shall remain on file with the Engineering, Surveying, and Permit Services Department until that department has verified that the plan has been successfully implemented.

Section 19.64.140(L): A minimum of on-site roadways shall be constructed. Temporary access roads utilized for initial machine installation shall be revegetated to a natural condition after completion of machine installation. The project proponent shall submit a plan of all proposed roads, temporary and permanent, for approval by the Planning Director prior to the issuance of any building permits.

Section 19.64.140(M): Construction of any slopes steeper than four to one (4:1) shall be prohibited unless specifically authorized by the Kern County Planning Department and mitigation is provided.

Section 19.64.140(N): Wind project facilities shall be encircled with a ten- (10-) foot-wide fuel break. Subject fuel breaks may be installed for each wind machine or the perimeter of the total project, but in no event shall encompass more than forty (40) acres per block. Permanent access roads may also be considered fuel breaks. This requirement may be modified at the discretion of the Kern County Fire Chief.

CHAPTER 4
Environmental Consequences

4.1 Introduction

This chapter assesses the environmental impacts or effects that would result from the implementation of the Proposed Action and alternatives described in Chapter 2. These analyses consider direct, indirect, and cumulative impacts of the Proposed Action and alternatives, including both short-term effects and long-term effects. This chapter also identifies mitigation measures to address adverse impacts and summarizes residual and unavoidable adverse effects on an issue-by-issue basis. The scope of the impact analyses presented in this chapter is commensurate with the level of detail 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.

The methodology for this assessment conforms with the guidance found in the following sections of the Council on Environmental Quality (CEQ) regulations for implementing 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" all reasonable alternatives, including the Proposed Action.

4.1.1 Analytical Assumptions

The following impacts analysis was conducted with the following assumptions:

1. The laws, regulations, and policies applicable to the BLM authorizing ROW grants for renewable energy development facilities would be applied consistently for all action alternatives.

2. The proposed facility would be constructed, operated, maintained, and decommissioned for each alternative as described in Chapter 2 and/or the plan of development (POD) submitted by the Applicant.

3. Short-term impacts are those expected to occur during the construction phase, the first 5 years of the operation and maintenance phase, and during project decommissioning. Long-term impacts are those that would occur after the first 5 years of operation during the full 30-year lifetime of the TWP.

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, aggregation of 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.

Section 1502.16 of the CEQ regulations forms the scientific and analytic basis for the comparisons of alternatives. This chapter consolidates the discussions of those elements required by sections 102(2)(C)(i), (ii), (iv), and (v) of NEPA which are within the scope of this DEIS/PA, and as much of Section 102(2)(C)(iii) as is necessary to support the comparisons. The discussion 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.

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:

1. Measures that have been proposed by the Project Proponent as part of the TWP's design, which are referred to as design features;
2. Regulatory requirements of other federal, State, and local agencies; and
3. 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 DEIS/PA. Because these mitigation measures are derived from a variety of sources, they also are required, and their implementation regulated, by various agencies.

Many of the mitigation measures are required by agencies other than the BLM, and their implementation will be enforced by those other agencies. For instance, the Endangered Species Act (ESA) Section 7 mitigation measures of the USFWS will be included in the Record of Decision (ROD), and the National Historic Preservation Act (NHPA) Section 106 mitigation measures will include a number of measures that also will be included in the ROD. The Project Proponent will be required by the ROD and the ROW grant to comply with the requirements of those other agencies (see, e.g., 43 CFR 2805.12(a) (Federal and state laws and regulations), (i)(6) (more stringent State standards for public health and safety, environmental protection and siting, constructing, operating, and maintaining any facilities and improvements on the ROW). 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. If a ROW is granted, these mitigation measures may be incorporated 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

In addition to direct and indirect effects, this DEIS/PA analyzes the cumulative impact of the construction, operation, maintenance, and decommissioning of the elements of the Proposed Action, 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 Action, present actions that are ongoing at the same time this DEIS/PA 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; however, if said level of detail was not available, a qualitative analysis is provided. If the Proposed Action and alternatives would have no direct or indirect effects on a resource, the DEIS/PA does not analyze potential cumulative effects on that resource. See, for example, Section 4.1.3, Resources and Resource Uses Not Affected or Present in the Action Area.

Table 4.1-1 (located at the end of this section) provides a comprehensive listing of all 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, other BLM actions/activities, and projects identified by local governments, such as Kern County. Table 4.1-1 presents 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 or 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 Action, the cumulative scenario for each issue area includes all or a portion of the projects identified in Table 4.1-1. Table 4.1-2 (located at the end of this section) identifies each resource or BLM program area, the cumulative analysis impact area (which is the geographic extent for each cumulative effects resource/issue), elements to consider, and which renewable projects, other BLM-authorized actions and other known and reasonably foreseeable actions or activities that are located or would occur within the cumulative impacts analysis area for each individual resource analyzed in this DEIS/PA.

With the exception of climate change, which is a global issue, the BLM has identified the Ridgecrest Field Office region as the largest area within which cumulative effects should be assessed. However, within the field office region, the specific area of cumulative effect varies by resource. For each resource, the geographic scope of analysis is based on the topography surrounding the TWP and the natural boundaries of the resource affected, rather than jurisdictional boundaries. 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 Action 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 Action's schedule. This is a consideration for short-term impacts from the proposed TWP. 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 TWP.

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 January 2013, there were 53 wind and solar development projects totaling 14,293 MW proposed in California in various stages of the environmental review process or under construction. Of these 53 renewable projects, 3 wind projects have been proposed in BLM's Ridgecrest Field Office service area; these projects are identified in Table 4.1-1 (see those identified by footnote number 1 in the "Project Type" column). In addition to these development proposals, 29 wind testing projects are under review or have been approved by the Ridgecrest Field Office.

Large renewable projects on private land are competing for utility Power Purchase Agreements, which will allow utilities to meet California's Renewables Portfolio Standard. 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:

1. Not all developers will develop the detailed information necessary to meet BLM standards. Preparing complete and detailed PODs is difficult, and completing the required NEPA and/or CEQA documents is especially time-consuming and costly.

2. As part of approval by the appropriate Lead Agency under NEPA and/or CEQA (generally the BLM and/or local jurisdiction, respectively), 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.

3. 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.

TABLE 4.1-1
CUMULATIVE PROJECTS LIST

ID#	Project Name, Ownership, Serial Number	Location	Project Type	Status	Acres	Project Description
1	Edwards Air Force Base (Department of Defense U.S. Air Force)	305 E. Popson Ave. Edwards AFB, CA 93524	Air Force Base	Existing	301,000	Federal Air Force Base for research, development, and test and evaluation of aerospace systems for the United States and its allies. Operates the U.S. Air Force Test Pilot School and supports non-military government agencies.
2	Tehachapi Renewable Transmission Project (TRTP) Segments 1-3 (SCE)	Between City of Lancaster and City of Santa Clarita, near Acton, California, and in the Monolith and Mojave areas	Transmission Line	Segments 1, 2, and 3a were completed in 2009. No schedule for completion has been developed yet for Segment 3b.	N/A	SCE's TRTP Segments 1-3 (formerly Antelope Transmission Project) was constructed in three segments: Segment 1 (Antelope-Pardee 500-kV T/L) of the Project involved the construction of a new 25.6-mile 500-kV transmission line between SCE's existing Antelope and Pardee Substations. Segment 2 (Antelope-Vincent 500-kV T/ L) consists of a new 17.8-mile 500-kV transmission line connecting SCE's existing Antelope Substation with the Vincent Substation. Segment 3 (Antelope-Tehachapi T/L) consists of two phases. The first phase included construction of a new 26.1-mile, 500-kV transmission line connecting SCE's existing Antelope Substation to a proposed substation (Substation 1) in the Mojave Area. The second phase consists of a new 9.4-mile, 220-kV transmission line from the proposed Substation 1 to a proposed substation in the Monolith Area (Substation 2).
3	Tehachapi Renewable Transmission Project Segments 4-11 (SCE)	Southern Kern County, portions of Los Angeles County, including the ANF and U.S. Army Corps of Engineers lands, and southwestern San Bernardino County, California	Transmission Line and substation facilities	The Final EIR for the TRTP was approved on December 17, 2009. Construction of the project began in Fall of 2010 and is expected to end in 2015.		Segments 4 through 8, as well as Segments 10 and 11 of the TRTP are transmission facilities including new transmission lines and numerous rebuilding of existing transmission lines; Segment 9 addresses the addition and upgrade of substation facilities.
4	Manzana Wind Energy Project (MWEP) (Iberdrola Renewables, LLC)	Willow Springs Area, eastern Kern County	Wind Energy	Existing. Construction began in December 2010 and was completed in 2012.	5,820	Formerly the PdV Wind Project, consists of 126 1.5 MW WTGs with a total capacity of 189 MW.
5	Alta Wind Energy Center (Terra-Gen)	Tehachapi	Wind Energy	Existing. Commercial operation began in January 2011.	9,120	Formerly the Alta–Oak Creek-Mojave Wind Project, a wind energy development with a generating capacity of 1,320 MW by 490 WTGs. Additional phases are planned to increase total generation capacity to 3,000 MW.

TABLE 4.1-1 (Continued)
CUMULATIVE PROJECTS LIST

ID#	Project Name & Ownership	Location	Project Type	Status	Acres	Project Description
6	Coram Brodie Wind Project (Coram, Inc.)	Tehachapi	Wind Energy	Existing	60	Wind energy development with a generating capacity of 3 MW. A Mitigated Negative Declaration was prepared and the project approved by the Board of Supervisors in May 2010. Construction began in 2010.
7	Pine Tree Wind Development Project	Tehachapi	Wind Energy	Existing	8,000	Wind energy development with a generating capacity of 120 MW. The Final EIR was certified in April 2005 and the facility is currently in operation.
8	Sky River Wind Energy Facility (NextEra)	Tehachapi	Wind Energy	Existing	N/A	Wind energy development with a generating capacity of 77 MW. Began commercial operation in 1991 and operates with 342 225-kW Vestas V27 WTGs.
9	PdV Infill Project	Tehachapi	Wind Energy	The Final EIR for the PdV Wind Project was amended for this project and was approved by the Board of Supervisors in March 2010. Construction of this project is expected to be completed in 2012.	2,422	The infill project entails the relocation of turbines to private lands adjacent to the approved PdV Wind Project. Expanded the approved PdV Wind Project boundary and reconfigured the location of the WTGs, but did not include any increase in the number of WTGs or its MW capacity.
10	Pacific Wind Energy Project (PWEP) (EDF Renewable Energy)	Tehachapi	Wind Energy	Operation began in August 2012.	8,500	Wind energy development with a generating capacity of 140 MW by 151 WTGs.
11	Pacific Wind Infill Project (EDF Renewable Energy)	Tehachapi	Wind Energy	The Addendum to the Pacific Wind Energy Project Final EIR was approved by the Board of Supervisors in April 2011. Construction began in 2011.	1,325	Refinement of the Pacific Wind Energy Project to relocate WTGs onto land adjacent to the Pacific Wind Energy Project.
12	Windstar Generating Facility (Western Wind)	Tehachapi	Wind Energy	Operation began in March 2012,	1,850	Wind energy development with a generating capacity of 120 MW.
13	Alta Infill II Wind Energy Project	Tehachapi	Wind Energy	Approved by Kern County October 2011.	9,780	Proposed generation of up to 750 MW of electricity from up to 250 WTGs. Includes a 230-kV generation-tie transmission line, security fencing, access and service roads, an O&M facility, and laydown areas.
14	Alta East Wind Project	Tehachapi – located on BLM-administered land private land that is under the jurisdiction of Kern County	Wind Energy	Approved by Kern County January 2013; Final EIR/EIS published by BLM February 2013.	3,200	A proposed 300 MW wind project located approximately 3 miles northwest of the Town of Mojave and approximately 11 miles east of the City of Tehachapi.

TABLE 4.1-1 (Continued)
CUMULATIVE PROJECTS LIST

ID#	Project Name & Ownership	Location	Project Type	Status	Acres	Project Description
15	Catalina Renewable Energy Project (EDF Renewable Energy)	Tehachapi	Solar Energy	Initial operation began January 2013; expected to complete construction by mid-2013.	1,100	Solar energy development with a generating capacity of 143 MW.
16	Lower West Wind Energy Project (Western Wind Energy)	Intersection of Jackpine Avenue and 90th St. West, one mile east of Tehachapi–Willow Springs Road and three miles south of Oak Creek Road.	Wind Energy	Approved by Kern County July 2011.	185	Proposed generation of up to 14 MW of electricity from up to 7 WTGs. Includes wind turbines, meteorological tower, above and below-ground feeder lines, and dirt access roads.
17	Morgan Hills Wind Energy Project	Tehachapi	Wind Energy	Approved by Kern County October 2011.	3,773	Proposed generation of up to 230 MW of electricity from up to 230 WTGs on 700 acres of a 3,773-acre area in unincorporated Kern County. Includes wind turbine generators with foundation pads, crane pads, permanent access roads, switch yard and substation, temporary construction lay-down yards, parking areas, an O&M building, one temporary concrete batch plant, transmission lines, and an under-ground power collection system.
18	Rising Tree Wind Energy Project	Tehachapi	Wind Energy	Meteorological testing authorized. Notice of Intent to prepare a Draft EIS published in January, 2011.	2,746	Proposed generation of up to 234 MW of electricity from up to 78 WTGs. Includes wind turbine generators with foundation pads, crane pads, permanent access roads, switch yard and substation, temporary construction lay-down yards, parking areas, a 10,000 square foot O&M building, one temporary concrete batch plant, transmission lines, and an underground power collection system.
20	North Sky River Wind Energy Project and Jawbone Wind Energy Project	Tehachapi	Wind Energy	The project was approved by the Kern County Board of Supervisors in August 2011. Construction began in 2012.	1,330	Generation of up to 325.5 MW of electricity from up to 150 WTGs. Includes WTGs with foundation pads, crane pads, permanent access roads, collector substation, an O&M facility, one temporary concrete batch plant, communication system cables, an underground power collection system, and a 230-kV generation-tie transmission line.

TABLE 4.1-1 (Continued)
CUMULATIVE PROJECTS LIST

ID#	Project Name & Ownership	Location	Project Type	Status	Acres	Project Description
21	Clearvista Wind Project	Tehachapi	Wind Energy	Approved by the Kern County Planning Commission in August 2011.	226	The Clearvista Wind Project would generate up to 40 MW of electricity from up to 14 WTGs. The facility includes above and below-ground transmission lines, security fencing, and dirt access roads. The project proposes a 230-kV generation-tie transmission line to connect to SCE's Highwind Substation.
23	Avalon Wind Farm (EDF Renewable Energy)	Tehachapi	Wind Energy	Draft EIR published August, 2012.	10,000	Proposed generation of 255 MW of wind power on ZCC Map 197, 198, 214, 215, 216. Power generated would tie into the SCE Windhub Substation.
24	Aero Energy, LLC	1 mile west of Tehachapi Willow Springs Road, 3 miles south of Oak Creek Road	Wind Energy	Application received December, 2009.	185	Proposed generation of up to 14 MW of wind energy.
25	Lehigh Southwest Cement Company	3 miles northeast of Tehachapi	Cement Company	Existing	1,000	Cement plant originally built in the early 1900s and renovated in 1990. The new plant has six-stage preheater, vertical roller mill, indirect coal-fired system and pre-blending dome. The dome is 335 feet in diameter and 95 feet tall.
26	Monte Vista Solar (Edison Mission Energy)	Purdy Ave. & 10th Street East	Solar Energy	Existing	1,040	Project would generate 126 MW of electricity using solar PV technology. The project proposes a 10-mile 66-kV generation-tie transmission line to connect to SCE's Windhub Substation.
27	Distributed Solar Projects	In the vicinity of Mojave and California City	Solar Energy	Eight sites approved in December 2011 and January 2012.	1,709	Ten individual solar projects for ten sites totaling 1,709 acres that would generate up to 214 MW through solar PV power. Power generated would connect into the local grid using existing overhead power lines. The ten projects are Rosamond One and Two, Tehachapi Solar, Tehachapi Solar 2, Columbia, Columbia Two, Columbia 3, Rio Grande, Great Lakes, and Barren Ridge 1.
28	Mojave Solar Park (Cal West Energy)	1300 block of Hwy 58	Solar Energy	Proposed	29	Distributed solar project
29	Sinarpower Inc	South of Oak Creek Rd.	Solar Energy	Proposed	17.5	Distributed solar project

TABLE 4.1-1 (Continued)
CUMULATIVE PROJECTS LIST

ID#	Project Name & Ownership	Location	Project Type	Status	Acres	Project Description
30	The Aeromen LLC	2 miles west of Mojave on Oak Creek	Solar Energy	Application received March 2011	237	Four solar project proposed on 237 acres.
31	Tehachapi Sanitary Landfill Buffer (Kern County Waste Management)	Tehachapi	Landfill	Application received November 2010	N/A	Landfill request to increase buffer zone.
32	Mojave Landfill (Kern County Waste Management)	Mojave	Landfill	Reviewing Notice of Preparation	N/A	Expansion to regional landfill.
33	Rosamond Solar (Sempra US Gas & Power, LLC)	9 miles west of Rosamond	Solar Energy	The Final EIR was completed in October 2010. The project approved by the Board of Supervisors in November 2010. Construction is expected to begin in 2014	1,330	Project would generate up to 120 MW of electricity using solar PV technology. The project proposes a 2.5-mile 230 kV generation tie-line to tie into the planned SCE Whirlwind Substation.
34	Antelope Valley Solar Project (MidAmerican Solar)	9 miles west of Rosamond in Kern and Los Angeles Counties	Solar Energy	Construction began in 2013; scheduled to be complete in 2015.	4,782	Project would generate 579 MW of electricity using solar PV technology in both Kern and Los Angeles Counties. The project proposes a 9-mile 230 kV generation tie-line to tie into the planned SCE Whirlwind Substation.
36	High Desert Solar Project	Purdy Avenue, south of the community of Mojave	Solar Energy	Notice of Preparation/Initial Study released in April 2011; Draft EIR release suspended.	154	Project would generate up to 18 MW of electricity using solar PV technology.
38	Ridge Rider Solar Park (Global Real Estate Investment Partners, LLC)	3.5 miles northwest California City	Solar Energy	Notice of Preparation/Initial Study released in March 2010	475	32 MW solar PV facility. Power would interconnect with LADWP's Barren Ridge Switching facility on an underground/overhead gen-tie line.
39	Willow Springs Solar Array (First Solar)	3 miles north of SR 138 and 9 miles west of Rosamond	Solar Energy	Notice of Preparation/Initial Study released in March 2010	1,402	Project would develop a 160 MW solar PV facility on active or fallow agriculture. The project proposes an 11-mile 66 kV generation tie-line to tie into the SCE Antelope Substation.

TABLE 4.1-1 (Continued)
CUMULATIVE PROJECTS LIST

ID#	Project Name & Ownership	Location	Project Type	Status	Acres	Project Description
40	Ridgecrest Recycling & Sanitary Landfill (Kern County Waste Management)	2 miles west of City of Ridgecrest	Landfill	Draft EIR was released for public review June 2010	105	Vertical expansion over the existing unlined refuse disposal area, horizontal expansion through the installation of a landfill liner for new waste cells. Lifespan of the project is 31 years.
41	Soledad Mountain Project (Golden Queen Mountain Co., Inc)	2 miles west of SR-14 and south of Silver Queen Road	Mining	Final EIR was published in March 2010. Updated Feasibility Study Report published October 2012.	1,440	An open pit, heap leach mining operations for aggregate and construction materials. Project was originally approved in 1997 but has been revised to be smaller in scope than the project as approved in 1997.
42	Fresh Winds International Ltd. (WRA Engineering)	NEC Rutan & Purdy; Mojave	Zone Change to R-1	Application received June 2009	40	Zone change
43	Larry Federiko	12433 United St., Mojave	Commercial	Application received May 2009	8	Request to operate salvage/junk yard
44	Mojave 58 Investments/McIntosh & Associates	E/S SR 58 at Altus Ave.	Industrial	Application received, modification to allow phasing requested November 2010.	130	Industrial Plan
45	North Star Properties/ Mark Judson	Westside Koch at Douglas Ave, Mojave	Residential	Application under review	50	Cluster Combining District Plan (residential and commercial developments)
46	Greg Lansing/Oliver Cagle	N/S of Y of SR14 and SR58, Mojave	Residential	Application under review	510	Change the Mojave Specific Map Plan Designations Resources Management (8.5, 8.5-2.5) and Residential (5.4-2.5 maximum 4 units/acre) to Residential 5.3 (Maximum 10 units/acre). 465 square-feet lots
47	Julio Segura	16026/16032 "L" St, Mojave	Residential	Application under review	N/A	Plan for 2 Duplexes
48	Jones and Delbert and Tracy (GPS Services)	13518 Tehachapi Willow Springs Road	Zone Change	Application under review	19	Zone change from Estate (20) to Agriculture
49	AV Solar Ranch One (First Solar)	Northern LA County, west of Antelope Valley	Solar Energy	Project was approved in December 2010. Construction began in August 2011 and the project is expected to be completed in 2013.	2,093	Project is a 230 MW solar PV facility with a 4.25-mile gen-tie to the SCE Whirlwind Substation.
50	Blue Sky Wind Energy (NextEra)	Northern LA County, southwest of Antelope Valley	Wind Energy	Early environmental review	7,500	225 MW wind energy project
51	Alpine Solar Project (NRG)	Northern LA County, west of Antelope Valley	Solar Energy	An MND was adopted and project was approved. Applicant has requested use of an additional 35 acres.	800	92 MW solar PV project

TABLE 4.1-1 (Continued)
CUMULATIVE PROJECTS LIST

ID#	Project Name & Ownership	Location	Project Type	Status	Acres	Project Description
52	Ruby Solar Project (Ruby Solar LLC)	Northern LA County, west of Antelope Valley	Solar Energy	Early environmental review	160	20 MW solar PV project
53	Wildflower Green Energy Farm (Element Power)	Northern LA County southwest of Antelope Valley	Wind Energy	Los Angeles County Board of Supervisors rejected the application for new meteorological towers. On hold.	3,787	300 MW wind energy project
54	California High-Speed Rail	Los Angeles to San Francisco, crossing the Tehachapi Wind Resource Area	Railroad	Program level review began in 2002 and ended in 2005. Project level review began in 2007. Bakersfield to Palmdale EIR team presented a Preliminary Alternatives Analysis in September, 2010. Fresno to Bakersfield Revised Draft EIR/EIS published in 2012.	N/A	High-speed rail line with 800 miles of track. Portion crossing the Tehachapi Wind Resource Area is an 85-mile line from Bakersfield to Palmdale. This section travels southeast and roughly parallels highways 58 and 14. Stations will be in the terminus cities of Bakersfield, where it will connect with the Fresno-to-Bakersfield section, and Palmdale, where it will connect with the Palmdale-to–Los Angeles section.
55	North Sky River Right of Way Application for Access Roads CACA 052626	Tehachapi	Access roads and linear facilities	Approved December 2011	N/A	Improve 3,141 linear feet of existing roads, realign and widen 10,151 linear feet of existing roads, construct 2,086 linear feet of new road segments, and install underground electrical transmission and fiber optic communication lines on public land in order to access private lands for construction and operation of the North Sky River Wind energy generation facility.
56	Ridgecrest Solar Power Project	5 miles southwest of Ridgecrest	Solar Energy	Application on hold pending additional redesign	N/A	Solar energy project likely to be using PV. Undergoing redesign.
57	Banducci Substation Project (SCE)	Unincorporated Cummings Valley area, approximately 7 miles west of Tehachapi	New substation and subtransmission lines	Application filed November 2012, construction expected to occur 2013 - 2016.	3	Consists of a new 66/12 kV substation, two new 66 kV subtransmission line segments, three new underground 12 kV distribution getaways. and fiber optic telecommunications equipment.
58	Downs Substation Project (SCE)	Ridgecrest	Upgrade and expand substation	Pre-construction activities began early 2013, expected to be operational by mid-2014.	2.5	Includes upgrading and expanding the existing Downs 33/12-kV Substation to a 115/12-kV substation; upgrading the Mechanical and Electrical Equipment Room (MEER) at Inyokern, McGen, and Searles Substations; rerouting an existing 115-kV subtransmission line; and installing a fiber optic telecommunication system.

N/A = Not Available

SOURCES: BLM, 2005; BLM, 2011a through 2011e; CEC, 2011; Kern County, 2011a and 2011b; LA County, 2011a; SCE, 2013a through 2013d; Western Wind Energy, 2013; Sempra US Gas & Power 2012; Antelope Valley Times, 2013.

TABLE 4.1-2
CUMULATIVE PROJECTS WITHIN THE GEOGRAPHIC SCOPE OF CUMULATIVE ANALYSIS FOR EACH RESOURCE AREA

Resource Area / BLM Program Area	Cumulative Analysis Impact Area	Elements to Consider	BLM Authorized and Other Known County Projects/Actions/Activities
Air Resources	MDAB	PM2.5, PM10, ozone	All projects
Global Climate Change	International, national, and regional	CO2e	All projects
Cultural Resources	ROW grant area	Disturbance of culturally significant resources, and alteration of the historic and cultural landscape of the area over time.	MWEP, PWEP
Lands and Realty	Project site and linear facilities corridor; CDCA Plan areas bearing the multiple use class designated lands	Designated utility corridors (e.g., transmission lines, cellular telephone towers, poles), existing ROWs, restriction or preclusion of otherwise allowable use opportunities	All solar, wind and transmission line projects.
Livestock Grazing	Antelope Valley allotment	Conversion of grazing acreage within the Antelope Valley allotment	No past present or reasonably foreseeable projects that may impact livestock grazing within the Antelope Valley allotment are known, other than the Proposed Action.
Mineral Resources	Kern County, including BLM lands within the County	Availability of a locally important mineral resource or a known regionally important mineral resource	All projects in Kern County
Noise	Areas within 1 mile of the Project	Noise levels at sensitive receptors	MWEP, PWEP
Paleontological Resources	Kern County Holocene alluvium, Pleistocene alluvium, and dry desert washes	Loss of sensitive paleontological resources	All projects in Kern County
Public Health and Safety	BLM Ridgecrest Office Fire and Aviation service area	Safety hazards to aircraft operations, hazardous materials, blasting, herbicides, and construction related traffic.	All projects
Recreation	40-mile radius from the project site	Adverse affects to recreational resources	All projects
Social and Economic Setting	Kern County/Bakersfield Metropolitan Statistical	Population size and composition, settlement patterns, housing demand, business revenues and conflicts, and property value	All projects in Kern County
Soil Resources	TWP site and access roads	Soil resources, loss of top soil, erosion	MWEP, PWEP
Special Designations	40-mile radius from the project site	Adverse affects to viewscape	All projects

Resource Area / BLM Program Area	Cumulative Analysis Impact Area	Elements to Consider	BLM Authorized and Other Known County Projects/Actions/Activities
Transportation and Public Access	Local and regional roadways and highways that would be used for TWP construction activities and for access by construction workers and vehicles.	Traffic and public access	All projects
Vegetation Resources	The western Mojave Desert and Tehachapi and Piute Mountains including the Tehachapi Wind Resource Area	Native vegetation communities and special-status plant species	All projects
Visual Resources	15-Mile radius from the project site	Changes to visual character in the project area, visual impacts when viewing from Pacific Crest Trail	MWEP, PWEP, Alta-Oak Creek Mojave Project, Catalina Renewable Energy Project, and the Tehachapi Renewable Transmission Project
Water Resources	Antelope – Willow Springs Watershed	Off-sit hydrology, stormwater / flood flows, surface water quality, groundwater levels and supply	Edwards Air Force Base (Department of Defense U.S. Air Force), Tehachapi Renewable Transmission Project (TRTP) Segments 1-3 (SCE), Tehachapi Renewable Transmission Project Segments 4-11 (SCE), Manzana Wind Energy Project (MWEP) (Iberdrola Renewables, LLC), Alta Wind Energy Center (Terra-Gen), Coram Brodie Wind Project (Coram, Inc.), PdV Infill Project, Pacific Wind Energy Project (PWEP) (EDF Renewable Energy), Windstar Generating Facility (Western Wind), Alta Infill II Wind Energy Project, Alta East Wind Project, Catalina Renewable Energy Project (EDF Renewable Energy), Lower West Wind Energy Project (Western Wind Energy), Morgan Hills Wind Energy Project, Rising Tree Wind Energy Project, Avalon Wind Farm (EDF Renewable Energy), Aero Energy, LLC, Monte Vista Solar (Edison Mission Energy), Mojave Solar Park (Cal West Energy), Sinarpower Inc, The Aeromen LLC, Mojave Landfill (Kern County Waste Management), Rosamond Solar (Sempra US Gas & Power, LLC), Antelope Valley Solar Project (MidAmerican Solar), High Desert Solar Project, Willow Springs Solar Array (First Solar), Soledad Mountain Project (Golden Queen Mountain Co., Inc), Fresh Winds International Ltd. (WRA Engineering), Salvage/Junk yard Larry Federiko, Mojave 58 Investments/McIntosh & Associates, North Star Properties/Mark Judson, Greg Lansing/Oliver Cagle, Duplexs Julio Segura, Jones and Delbert and Tracy (GPS Services), AV Solar Ranch One (First Solar), Blue Sky Wind Energy (NextEra), Alpine Solar Project (NRG), Ruby Solar Project (Ruby Solar LLC), Wildflower Green Energy Farm (Element Power), California High-Speed Rail, North Sky River Right of Way Application for Access Roads CACA 052626
Wildland Fire Ecology	Area within one mile of the Proposed Action boundary	Wildfire ignitions	MWEP, PWEP

Resource Area / BLM Program Area	Cumulative Analysis Impact Area	Elements to Consider	BLM Authorized and Other Known County Projects/Actions/Activities
Wildlife Resources	Western Mojave Desert and Tehachapi and Piute Mountains	Loss of habitat, displacement and/or potential mortality of wildlife species, California condor mortality	All Projects

4.2 Air Resources

4.2.1 Methodology for Analysis

The CARB URBEMIS 2007, version 9.2.4, was used to estimate construction emissions from the grading, electrical trenching, construction of roads and pads, and installation of wind turbines associated with the TWP. URBEMIS is a computer program that can be used to estimate emissions associated with land development projects in California such as residential neighborhoods, shopping centers, and office buildings; area sources such as gas appliances, wood stoves, fireplaces, and landscape maintenance equipment; and construction projects. URBEMIS 2007, version 9.2.4, was also used to analyze the TWP's mobile and operational emissions, which would likely result from on-site maintenance.

The TWP would include a maximum of 40 wind turbines, producing up to 60 MW power, on a small proportion of the approximately 1,207-acre TWP site. Because the TWP project lacks an industrial component that would be considered a lead emission source, the concentrations and emissions of lead were not analyzed for the Proposed Action or alternatives.

The following factors were assumed in the technical analyses of air quality using the URBEMIS 2007 emission model:

1) Total construction would take a maximum of 4 months
2) The activities undertaken within each month would be as follows:
    - Month 1: Grading
    - Months 2–3: Deliveries and electrical trenching
    - Months 2–4: Installation of turbines
    - Month 4: Final grading and clean-up
3) A maximum of eight (8) acres would be disturbed daily during grading.
4) There would be a total of 195.4 acres of ground disturbance (171.1 acres from temporary impacts and 24.3 acres from permanent impacts).
5) The operational winter temperature would be 50°F, and the operational summer temperature would be 85°F.
6) Default parameters, such as the horsepower and the operational duration, were used for all construction equipment anticipated to be used for the proposed Project.

4.2.2 Discussion of Direct and Indirect Impacts

Alternative 1 - Proposed Action (40 WTGs)

Construction

During construction of the TWP, there is a potential to create air quality impacts through the use of heavy-duty construction equipment and through vehicle trips generated from construction workers traveling to and from the TWP site. Potential emission estimates from construction activities are based on emission factors and construction scenario information for development at the TWP site. The total amount of construction, including duration and level of construction activity occurring at the TWP site, would influence the estimated construction emissions and resulting potential impacts. Therefore, the emission forecasts are based on conservative assumptions about the construction scenario, with a large amount of construction activity occurring in a relatively short time frame. In addition, worker commute trips would vary throughout the construction period. This analysis used the highest estimated number of worker commute trips. Due to the conservative nature of these assumptions, actual emissions from construction of the TWP would most likely be less than estimated emissions.

The daily regional construction emissions for the TWP were estimated by Sapphos Environmental Inc. using the URBEMIS2007 emissions model, as detailed in the March 2014 *Tylerhorse Wind Energy Project Air Quality Impact Technical Report* (see Appendix H). As shown in Table 4.2-1 below, the daily regional construction emissions associated with construction would not be expected to exceed the Eastern Kern Air Pollution Control District (EKAPCD) threshold for volatile organic compounds (VOCs), also termed reactive organic gases (ROG), but would be expected to exceed the EKAPCD threshold for oxides of nitrogen (NOx).

The annual regional construction emissions were also estimated using the URBEMIS 2007 emissions model. As shown in Table 4.2-2, the annual regional construction emissions associated with the Proposed Action would not be expected to exceed the EKAPCD threshold for ROG, NOx or PM_{10}.

Localized Construction Impacts

Toxic air contaminant (TAC) impacts at the TWP site can be attributed primarily to diesel particulate emissions associated with the use of heavy-duty equipment during construction, and have been analyzed using the standard health risk assessment methodology to determine individual cancer risk of a person continuously exposed to TACs over a 70-year lifetime. Due to the relatively short-term construction schedule of approximately 4 months and the small number of permanent residents living within the TWP site, construction-related TAC emissions of the TWP would be expected to be below the EKAPCD threshold.

TABLE 4.2-1
ALTERNATIVE 1: UNMITIGATED ESTIMATED DAILY REGIONAL CONSTRUCTION EMISSIONS (pounds per day)[a]

Emission Sources	ROG	NO_x	CO	SOx	PM_{10}	$PM_{2.5}$
Off-Road Sources						
Mass Site Grading: Roads and Pads	44	**351**	205	<1	176	48
Electrical Trenching	10	86	49	<1	4	3
Building Construction: Turbine Installation	30	**261**	108	<1	9	9
Fine Site Grading	25	**190**	123	<1	170	43
Maximum Off-road Emissions	44	**351**	205	<1	176	48
Mobile Sources						
Delivery Trucks and Employee Commutes	<1	3	11	<1	45	5
Total Emissions						
Maximum Regional Total	45	**354**	216	<1	221	53
EKAPCD Thresholds	137	137	NA	NA	NA	NA
Exceeds Thresholds (Yes or No)?	No	**Yes**	NA	NA	NA	NA

a Values in **bold** are in excess of the applicable EKAPCD threshold. NA = Not Available. ROG = reactive organic compounds. Please see Appendix H for additional information.

SOURCE: Sapphos Environmental, Inc. 2014.

TABLE 4.2-2
ALTERNATIVE 1: UNMITIGATED ESTIMATED ANNUAL REGIONAL CONSTRUCTION EMISSIONS (tons per year)[a]

Emission Sources	ROG	NO_x	CO	SOx	PM_{10}	$PM_{2.5}$
Maximum Off-road Emissions	2	13	7	0	4	1
Delivery Trucks and Employee Commutes	<1	<1	2	0	8	1
Maximum Regional Total	2	13	8	0	12	2
EKAPCD Thresholds	25	25	NA	NA	15	NA
Exceeds Thresholds (Yes or No)?	No	No	NA	NA	No	NA

a Values in **bold** are in excess of the applicable EKAPCD threshold. NA = Not Available. Please see Appendix H for additional information.

SOURCE: Sapphos Environmental, Inc. 2014.

Odors at the TWP site can be emitted from equipment exhaust, application of architectural coatings, and asphalt operation. However, since the TWP construction has a relatively short-term schedule, and since odors are normally localized and confined to the TWP site, an odor nuisance is not likely to happen. The construction of the TWP would use typical construction equipment,

and odors at the TWP site would be typical for most construction sites. In addition, construction of the proposed Project would be required to comply with EKAPCD Rule 419.

CO is considered a localized problem and requires additional analysis when a proposed project is likely to expose sensitive receptors to localized levels of CO concentrations from vehicles, which are known as CO "hotspots." The maximum daily regional total CO emissions from construction of the Proposed Project is approximately 286 pounds/day (Table 4.2-1), and the maximum annual regional total CO emission from construction of the Proposed Project is approximately 11 short tons/year (Table 4.2-2). Construction of the Proposed Project would require the use of off-road construction equipment, delivery trucks, and vehicles for employee commutes. CO concentrations could be increased during the construction. However, due to a maximum of 4-month construction period, the potential increase in CO concentrations at sensitive receptor locations would be limited to these 4 months.

Localized on-site (off-road) emissions are the maximum construction emissions due to off-road construction equipment and unpaved off-road travel by employees and delivery trucks. Localized on-site (off-road) emissions for the TWP would not exceed the EKAPCD thresholds for VOCs or PM, but would exceed the EKAPCD daily threshold for NOx. Due to the short timeline of the TWP construction and temporary nature of potential exposures to construction-related air emissions from the TWP, off-site residents, including adults and children, would not be expected to be majorly affected by the TWP. In addition, although off-site sensitive receptors would have a potentially longer exposure to the TWP's construction-related air emissions, the distance from the TWP site would be expected to minimize potential impacts. The closest potential sensitive receptor is an unconfirmed residence located approximately 0.25 mile northeast from the nearest proposed turbine pad. Although PM_{10} emissions during construction would exceed the EKAPCD threshold, this potential residence would not be critically affected due to the prevailing wind direction. Prevailing wind in the TWP area blows from the northwest, therefore, wind would blow dust associated with construction activities away from the nearest potential sensitive receptor. The nearest sensitive residences located to the west, downwind, of construction activities are more than 0.5 mile away from the nearest proposed turbine pads. Therefore, construction impacts at these sensitive receptors would be minimal.

Operational Impacts

Long-term operational air emissions at the TWP site are likely to result from mobile sources due to scheduled maintenance that would be conducted approximately every 6 months on each proposed wind turbine, and any necessary repairs. The TWP would be expected to generate a maximum of 24 daily vehicle trips due to employee commutes. Operational equipment emissions were calculated assuming a total of 8 days per year of equipment use, based on a worst-case scenario in which approximately 10 percent of proposed turbines fail, and assuming a maximum of forty (40) 1.5-MW turbines that could be used for the TWP.

The URBEMIS 2007 emissions model was used to calculate emissions from operational equipment. Mobile-source emissions due to employee commute trips were modeled using EMFAC 2007, version 2.3, embedded within the URBEMIS 2007 version 9.2.4 model.

The TWP would be anticipated to have potential impacts to air quality during operation, some of which would be offset by reduced emissions due to the TWP's purpose to produce renewable energy to displace fossil fuel use. Operational emissions from both operational equipment and mobile sources were calculated based on a worst-case scenario of the maximum number of turbines that could be used for the project. As shown in Table 4.2-3 daily operational emissions of VOCs and NOx from the TWP would not exceed EKAPCD thresholds. The emission models likely show results that may be higher than actual emissions because simultaneous operation of all equipment is a conservative assumption. In addition, the TWP would be anticipated to prevent the emission of approximately 57 short tons of NOx per year due to the displacement of fossil fuel use, which is equivalent to approximately 312 pounds of NOx per day based on a generation capacity of 60 MW. Even without the credit for the fossil fuel emissions that would be offset by implementation of the TWP, daily emissions from operation and maintenance of the TWP would be below EKAPCD thresholds.

TABLE 4.2-3
ALTERNATIVE 1: UNMITIGATED ESTIMATED DAILY OPERATIONAL EMISSIONS
(pounds per day)[a]

Emission Sources	ROG	NO_x	CO	SOx	PM_{10}	$PM_{2.5}$
Operational Equipment	4	29	14	0	1	1
Mobile Sources	<1	3	7	<1	25	5
Total Emissions	4	32	21	<1	27	7
EKAPCD Thresholds	137	137	NA	NA	NA	NA
Exceeds Thresholds (Yes or No)?	No	No	NA	NA	NA	NA

a Values in **bold** are in excess of the applicable EKAPCD threshold. NA = Not Available. Please see Appendix H for additional information.

SOURCE: Sapphos Environmental, Inc. 2014.

The annual operational emissions of PM_{10} are shown in Table 4.2-4 to be below the EKAPCD thresholds for the TWP. It is also important to note that the estimated emissions are likely higher than actual emissions from the TWP due to the conservative assumptions used for emission modeling. For example, the model does not consider that the on-site roads for the TWP will be cleared, compacted, and topped with caliche. Travel on a caliche road surface would be expected to produce less PM_{10} emissions than travel on an unpaved and untreated road would produce.

Local Operational Impacts

Carbon Monoxide

CO is considered a localized problem and requires additional analysis when a project is likely to expose sensitive receptors to localized levels of CO concentrations from vehicles, which are known as CO "hotspots." Due to the low number of vehicle trips anticipated for the TWP (24 per day), no major increase in CO concentrations at sensitive receptor locations would be expected, and localized operational CO emissions would be minimal.

TABLE 4.2-4
ALTERNATIVE 1: UNMITIGATED ESTIMATED ANNUAL OPERATIONAL EMISSIONS
(tons per year)[a]

Emission Sources	ROG	NO_x	CO	SOx	PM_{10}	$PM_{2.5}$
Operational Equipment	<1	<1	<1	0	<1	<1
Mobile Sources	<1	<1	<1	0	3	<1
Total Emissions	<1	1	1	0	3	1
EKAPCD Thresholds	25	25	NA	NA	15	NA
Exceeds Thresholds (Yes or No)?	No	No	NA	NA	No	NA

a Values in **bold** are in excess of the applicable EKAPCD threshold. NA = Not Available. Please see Appendix H for additional information.

SOURCE: Sapphos Environmental, Inc. 2014.

Toxic Air Contaminants

TAC impacts at the TWP site would result primarily from diesel particulate emissions associated with heavy-duty equipment operations. The operation of the TWP would not generate a substantial number of heavy-duty equipment operations or daily truck trips. Delivery truck trips during operation would be the primary contributor to the TAC level at the TWP site. However, the number of heavy-duty delivery trucks accessing the site on a daily basis would be minimal, and the TWP area is remote and largely unpopulated; therefore, TAC emissions would not occur in large concentrations in populated areas. In general, wind energy sites are not contributors of acute TAC impacts compared with other sources, such as manufacturing industries and automobile repair facilities, which are typical sources of acute and chronically hazardous TACs. Therefore, project operation–related TAC emissions would minimal.

Visibility-reducing Particles

The threshold for visibility under the California Ambient Air Quality Standards (CAAQS) is correlated with the standard extinction coefficient of 0.23 per kilometer. Due to the fact that the TWP's operation does not involve area-source emissions that would be expected to impair visibility, the impact of the TWP to visibility would be minimal.

Odor

Odor nuisances are typically associated with land uses and industrial operations, such as agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding. Since the TWP development includes wind turbines, and does not include any land uses or industrial operations typically associated with odor nuisance, odor impacts from the TWP would be expected to be minimal. Furthermore, although any on-site trash receptacles are potential sources of odors, they would be maintained and controlled in a manner that controls adverse odors and complies with EKAPCD Rule 419. Daily operational emissions, TAC levels, visibility, and odor impacts would be expected to be below the EKAPCD thresholds.

Conformity Determination

The potential of the proposed Project to be subject to the conformity determination with the federal Clean Air Act (FCAA) and the National Ambient Air Quality Standards (NAAQS) was analyzed. The General Conformity Rule requires the evaluation of the proposed action's emissions against the *de minimis* levels for all non-attainment pollutants in order to determine if the proposed action would be subject to a conformity determination. The portion of the MDAB where the proposed action would occur is designated as serious non-attainment and marginal non-attainment of the federal PM_{10} and ozone standards, respectively. The applicable *de minimis* levels for ozone are 100 tons per year NOx and 50 tons per year VOC. For PM_{10}, 70 tons per year is the applicable *de minimis* level (USEPA, 2011).The Proposed Project's annual unmitigated estimated construction and operational emissions were compared to the *de minimis* levels for ozone precursors (VOCs or NOx) emissions and PM_{10} emissions as shown in Table 4.2-5. As shown in Table 4.2-5, the proposed Project would not result in emissions that would exceed the applicable *de minimis* levels, and would thus not be subject to a conformity determination.

TABLE 4.2-5
ALTERNATIVE 1: CONFORMITY DETERMINATION
(tons per year)

	Ozone		
Emission Sources	**VOCs**	**NO_x**	**PM_{10}**
Construction	2	13	12
Operation	<1	1	3
De Minimis Level	10		70
Subject to Conformity Determination?	No		No

SOURCE: Sapphos Environmental, Inc. 2014; USEPA, 2014.

Decommissioning

The expected life of the TWP is 30 years. In the event that the site should be removed from power generation service, the proposed Project site would be reclaimed for other purposes. Equipment to be utilized for the closure and decommissioning of the TWP site would be similar to those used during construction activities. As such, decommissioning activities would generate temporary air quality emissions. These emissions would be similar to but less than those generated during construction as the activities would be less intense and of shorter duration.

Alternative 2 - Modified Proposed Action (37 WTGs)

Alternative 2 would be similar to the Proposed Action; however under this alternative, the overall size would be reduced by 94 acres and fewer wind turbine generators would be constructed. As a result, construction may occur for a shorter-period of time. In regards to localized air pollutant emissions associated with construction and operations, since Alternative 2 would require similar construction workforce and the same operational personnel as the Proposed Action, the localized emissions analysis for Alternative 1 would also apply to this alternative. In addition, the

decommissioning analysis would also be the same. However, modeled regional emissions associated with construction and operation of Alternative 2 and subsequent impact analyses are included below.

Construction

The daily regional construction emissions for this alternative were estimated by Sapphos Environmental Inc. using the URBEMIS2007 emissions model, as detailed in the March 2013 addendum in Appendix H. As shown in Table 4.2-6 below, the daily regional emissions associated with construction would not be expected to exceed the EKAPCD threshold for VOCs, but would be expected to exceed the EKAPCD threshold for NOx.

TABLE 4.2-6
ALTERNATIVE 2: UNMITIGATED ESTIMATED DAILY REGIONAL CONSTRUCTION EMISSIONS
(pounds per day)[a]

Emission Sources	ROG	NO_x	CO	SOx	PM_{10}	$PM_{2.5}$
Off-Road Sources						
Mass Site Grading: Roads and Pads	41	**325**	191	<1	163	44
Electrical Trenching[b]	13	100	63	<1	5	4
Building Construction: Turbine Installation	28	**242**	101	<1	9	8
Fine Site Grading	23	**177**	114	<1	156	40
Maximum Off-road Emissions	41	**325**	191	<1	163	44
Mobile Sources						
Delivery Trucks and Employee Commutes	1	3	11	<1	45	5
Total Emissions						
Maximum Regional Total	42	328	202	<1	208	49
EKAPCD Thresholds	137	137	NA	NA	NA	NA
Exceeds Thresholds (Yes or No)?	No	**Yes**	NA	NA	NA	NA

a Values in **bold** are in excess of the applicable EKAPCD threshold. NA = Not Available. Please see the 2013 addendum in Appendix H for additional information.

b. Emissions for the electrical trenching construction phase for Alternative 2 is higher than that of Alternative 1 because the overall daily hours for construction were reduced proportionately to account for the slight reduction in the area disturbed. However, as a result, the URBEMIS model increased the load factor on the equipment to compensate for the reduced number of hours.

SOURCE: Sapphos Environmental, Inc. 2014.

The annual regional construction emissions were also estimated using the URBEMIS 2007 emissions model. As shown in Table 4.2-7, the annual regional construction emissions associated with construction would not be expected to exceed the EKAPCD threshold for VOCs, NOx, or PM_{10}.

TABLE 4.2-7
ALTERNATIVE 2: UNMITIGATED ESTIMATED ANNUAL REGIONAL CONSTRUCTION EMISSIONS (tons per year)[a]

Emission Sources	ROG	NO_x	CO	SOx	PM_{10}	$PM_{2.5}$
Maximum Off-road Emissions	1	12	6	0	4	1
Delivery Trucks and Employee Commutes	<1	1	2	0	8	1
Maximum Regional Total	2	13	8	0	12	2
EKAPCD Thresholds	25	25	NA	NA	15	NA
Exceeds Thresholds (Yes or No)?	No	No	NA	NA	No	NA

a Values in **bold** are in excess of the applicable EKAPCD threshold. NA = Not Available. Please see the 2014 addendum in Appendix H for additional information.

SOURCE: Sapphos Environmental, Inc. 2014.

Operational Impacts

Long-term operational air emissions for this alternative are likely to result from mobile sources due to scheduled maintenance that would be conducted approximately every 6 months on each proposed wind turbine, and any necessary repairs. The URBEMIS 2007 emissions model was used to calculate emissions from operational equipment. Mobile-source emissions due to employee commute trips were modeled using EMFAC 2007, version 2.3, embedded within the URBEMIS 2007 version 9.2.4 model.

Alternative 2 would be anticipated to have potential impacts to air quality during operation, some of which would be offset by reduced emissions due to the TWP's purpose to produce renewable energy to displace fossil fuel use. Operational emissions from both operational equipment and mobile sources were calculated based on a worst-case scenario of the maximum number of turbines that could be used for the project. As shown in Table 4.2-8, daily operational emissions of VOCs, NOx and PM_{10} from Alternative 2 would not exceed EKAPCD thresholds. The emission models likely show results that may be higher than actual emissions because simultaneous operation of all equipment is a conservative assumption. In addition, Alternative 2 would be anticipated to reduce NOx emissions due to the displacement of fossil fuel use. Even without the credit for the fossil fuel emissions that would be offset by implementation of Alterative 2, daily emissions from operation and maintenance of this alternative would be below EKAPCD thresholds.

The annual operational emissions of PM_{10} are shown in Table 4.2-9 to be below the EKAPCD thresholds for this alternative. It is also important to note that the estimated emissions are likely higher than actual emissions due to the conservative assumptions used for emission modeling. For example, the model does not consider that the on-site roads for the alternative will be cleared, compacted, and topped with caliche. Travel on a caliche road surface would be expected to produce less PM_{10} emissions than travel on an unpaved and untreated road would produce.

TABLE 4.2-8
ALTERNATIVE 2: UNMITIGATED ESTIMATED DAILY OPERATIONAL EMISSIONS
(pounds per day)[a]

Emission Sources	ROG	NO_x	CO	SOx	PM_{10}	$PM_{2.5}$
Operational Equipment	4	29	14	0	1	1
Mobile Sources	<1	2	5	<1	19	4
Total Emissions	5	31	19	<1	20	5
EKAPCD Thresholds	137	137	NA	NA	NA	NA
Exceeds Thresholds (Yes or No)?	No	No	NA	NA	NA	NA

a Values in **bold** are in excess of the applicable EKAPCD threshold. NA = Not Available. Please see the 2014 addendum in Appendix H for additional information.
SOURCE: Sapphos Environmental, Inc. 2014.

TABLE 4.2-9
ALTERNATIVE 2: UNMITIGATED ESTIMATED ANNUAL OPERATIONAL EMISSIONS
(tons per year)[a]

Emission Sources	ROG	NO_x	CO	SOx	PM_{10}	$PM_{2.5}$
Operational Equipment	<1	<1	<1	0	0	0
Mobile Sources	<1	<1	1	0	3	1
Total Emissions	<1	<1	1	0	3	1
EKAPCD Thresholds	25	25	100	NA	15	NA
Exceeds Thresholds (Yes or No)?	No	No	No	NA	No	NA

a Values in **bold** are in excess of the applicable EKAPCD threshold. NA = Not Available. Please see the 2013 addendum in Appendix H for additional information.
SOURCE: Sapphos Environmental, Inc. 2014.

Conformity Determination

The potential of Alternative 2 to be subject to the conformity determination with the FCAA and NAAQS was analyzed. The alternative's annual unmitigated estimated construction and operational emissions were compared to the *de minimis* levels for ozone precursors (VOCs or NOx) emissions and PM_{10} emissions as shown in Table 4.2-10. As shown in Table 4.2-10, Alternative 2 would not result in emissions that would exceed the applicable *de minimis* levels, and would thus not be subject to a conformity determination.

TABLE 4.2-10
ALTERNATIVE 2: CONFORMITY DETERMINATION
(tons per year)

Emission Sources	Ozone		PM_{10}
	VOCs	NO_x	
Construction	2	13	12
Operation	<1	<1	3
De Minimis Level	50	100	70
Subject to Conformity Determination?	No	No	No

SOURCE: Sapphos Environmental, Inc. 2014; USEPA, 2014.

Alternative 3 - No Action Alternative

If Alternative 3 is implemented, no changes to the site would occur, as the BLM would not approve the proposed TWP and would not amend the CDCA Plan. As such, no wind energy project would be constructed, and the existing environmental setting would be maintained. As no development would occur under this condition, no impacts to air quality would occur.

Alternative 4 - No Project; Unsuitable

If Alternative 4 is implemented, the BLM would not approve the proposed TWP and would amend the CDCA Plan to preclude development of a wind project on the Project site in the future. As such, no wind energy project would be constructed at the site, and the existing environmental setting would be maintained. As no development at the site associated with the TWP would occur, there would be no impacts to air quality under this alternative.

Alternative 5 - No Project; Suitable

If Alternative 5 is implemented, BLM would not approve the proposed TWP and would amend the CDCA Plan to permit the development of another wind project on the site in the future. As such, if the BLM were to approve another wind energy project, it is assumed that such wind project would be similar to the Proposed Action, therefore potential air quality impacts as described for the Proposed Action could potentially occur at some undeterminable time in the future.

4.2.3 Cumulative Impacts

Geographic Extent/Context

The cumulative analysis is based, on a quantitative analysis of projects in the vicinity of the TWP. A one-mile and six-mile radius project analysis quantifies operation impacts along with all identified projects in the vicinity of the TWP site for comparison with the MDAB and the air basin's Kern County portion totals for NOx and ROG.

Existing Cumulative Conditions

Current area designations for criteria air pollutants represent the existing cumulative conditions for the TWP site area. The TWP site is within the Mojave Desert Air Basin (MDAB) which has a moderate nonattainment status for the State 1-hour ozone standard and nonattainment for the State PM_{10} standard, as well as marginal and serious nonattainment for the federal 8-hour ozone and federal PM_{10} standards, respectively. The TWP area is designated as attainment or unclassified for the federal PM_{10} standard, and the State and federal CO, NOx, SOx and $PM_{2.5}$ standards.

4.2.4 Reasonably Foreseeable Projects

There are four projects in close proximity to the Proposed Action: Southern California Edison Tehachapi Renewable Transmission (SCE TRTP) Project, MWEP, PWEP, and the Catalina Renewable Energy Project. The SCE TRTP Project would involve the construction and upgrade of electrical transmission lines and substations between eastern Kern County and San Bernardino County. The MWEP is located on a 5,820-acre site directly west of the TWP site and includes installation of up to 300 wind turbines to generate up to 300 MW of electricity. The PWEP is located on an 8,300-acre site directly south of the proposed action site and includes the installation of up to 300 wind turbines to generate up to 151 MW of electricity. The proposed Catalina Renewable Energy Project is located to the east of the proposed action site and proposes to install 200 MW of wind energy and 150 MW of solar energy on portions of a 7,472-acre site.

Other proposed projects located within a 6-mile radius include the Avalon Wind Energy Project, the Southern California Edison Tehachapi Renewable Transmission (SCE TRTP) Project, the Alta–Oak Creek Mojave Project, the Antelope Valley Solar Development, the David Firestone Solar Project, the Mon-Wei Lin Solar Project, the Morgan Hills Wind Project, the Rosamond Solar Project by First Solar, and the Rosamond Solar Project by SGS. Of the related projects located within a 1-mile and 6-mile radius, the SCE TRTP Project, the Alta–Oak Creek Mojave Project, the MWEP and the PWEP have completed their construction phases, and therefore only their operational emissions were included in the analysis.

4.2.5 Construction, Operation and Maintenance, Decommissioning

The mitigated construction emissions anticipated to result from the EKAPCD portion of the SCE TRTP Project, the Catalina Renewable Energy Project, the Avalon Wind Energy Project, the PWEP, the MWEP, and the Proposed Action were calculated (Table 4.2-11, Cumulative Annual Construction Emissions). Construction emissions for the other reasonably foreseeable projects listed above were not available at the time of preparation of this report. Maximum cumulative impacts for VOCs, NOx, and PM_{10} emissions resulting from construction of the proposed action and other reasonably foreseeable projects would be expected to be adverse and unavoidable for the maximum construction year. Construction emissions for other proposed projects located in the area of the TWP site were not available at the time of preparation of this analysis. However, if constructed at the same time as the TWP, construction emissions for other proposed projects

would also be expected to contribute air pollutant emissions due to grading activities and the use of heavy-duty equipment. Therefore, cumulative impacts due to construction of the TWP, in conjunction with the related past, present, or reasonably foreseeable probable future projects, would exceed EKAPCD thresholds and are considered to be adverse and unavoidable. However, these impacts are considered to be temporary given the timeline for construction of these projects, and is based on the conservative assumption that construction activities for all of these projects would take place concurrently (an unlikely scenario).

TABLE 4.2-11
CUMULATIVE ANNUAL CONSTRUCTION EMISSIONS
(tons per year)[a]

Emission Sources	ROG	NO_x	CO	SOx	PM_{10}	$PM_{2.5}$
Proposed Project	2	8	8	0	2	10
Avalon Wind Energy Project	4	27	22	<1	**147**	29
Catalina Renewable Energy Project	10	**65**	55	<1	**138**	22
Antelope Valley Solar Development	1	**17**	6	<1	10	3
Morgan Hills Wind Energy Project	10	**86**	47	<1	**67**	12
David Firestone	<1	5	24	0	<1	0
Mon-Wei Lin	4	21	24	0	6	1
Rosamond Solar by First Solar	9	**46**	41	<1	**39**	4
Rosamond Solar by SGS	3	29	17	<1	8	3
Maximum Annual Total	**41**	**297**	**236**	<1	**408**	72
EKAPCD Thresholds	25	25	100	2727	15	NA
Exceeds Threashold (Yes or No)?	**Yes**	**Yes**	**Yes**	No	**Yes**	No

a Values in **bold** are in excess of the applicable EKAPCD threshold. NA = Not Available. Please see Appendix H for additional information.

SOURCE: Sapphos Environmental, Inc. 2014.

The mitigated operational emissions anticipated to result from the EKAPCD portion of the SCE TRTP Project, the MWEP, the PWEP, the Catalina Renewable Energy Project, the Alta-Oak Creek Mojave Project, the Rosamond Solar Project, and the TWP are reported below in Table 4.2-12. Cumulative impacts to VOC and NOx emissions resulting from implementation of the proposed action and related projects would be expected to be below EKAPCD thresholds, even without considering the fossil fuel– related emissions displaced by the proposed action. Cumulative impacts related to PM_{10} emissions could be major, as shown in Table 4.2-12, primarily as a result of the Alta-Oak Creek Mojave Project. However, the adopted Environmental Impact Report for the Alta-Oak Creek Mojave Project states that the production of renewable energy from this Proposed Action would offset PM_{10} emissions by approximately 255.65 tons per year and operational air quality impacts are considered to be below the EKAPCD threshold. Notably, these offsets were not included in Table 4.2-12. Operational emissions for other reasonably foreseeable proposed projects listed above were not available at the time of preparation of this report. However, if approved and constructed, it is reasonable to assume that cumulative operational emissions for the TWP in conjunction with other proposed projects would

be below the EKAPCD thresholds when considering emissions offsets caused by the generation of renewable energy. Therefore, cumulative impacts due to operation of the TWP, in conjunction with the related past, present, or reasonably foreseeable probable future projects, would be considered to be below the EKAPCD thresholds.

TABLE 4.2-12
CUMULATIVE ANNUAL OPERATIONAL EMISSIONS
(tons per year) [a]

Emission Sources	ROG	NO_x	CO	SOx	PM_{10}	$PM_{2.5}$
Proposed Project	<1	1	1	0	1	<1
Avalon Wind Energy Project	<1	1	2	0	3	<1
MWEP	<1	<1	<1	0	1	<1
SCE TRTP Project	<1	2	5	0	7	1
PWEP	1	4	4	0	6	1
Alta-Oak Creek Mojave Project	<1	<1	3	0	**16**	3
Catalina Renewable Energy Project	<1	1	2	0	5	1
Rosamond Solar Project	1	<1	<1	0	<1	<1
Rosemond Solar by SGS	2	<1	<1	<1	<1	<1
Antelope Valley Solar Development	<1	<1	<1	0	<1	0
David Firestone	<1	0	<1	0	0	0
Maximum Annual Total	5	11	19	<1	**41**	7
EKAPCD Thresholds	25	25	100	2727	15	NA
Exceeds Thresholds (Yes or No)?	No	No	No	No	**Yes**[b]	No

a Values in **bold** are in excess of the applicable EKAPCD threshold. NA = Not Available. Please see Appendix H for additional information.

b Emissions values and threshold comparisons do not account for emissions offsets caused by the generation of renewable energy.

SOURCE: Sapphos Environmental, Inc. 2014.

As described above for decommissioning, the expected life of the TWP is 30 years. Equipment to be utilized for the closure and decommissioning of the TWP site would be similar to those used during construction activities. As such, decommissioning activities would generate temporary air quality emissions. These emissions would be similar to but less than those generated during construction as the activities would be less intense and of shorter duration. Although decommissioning of the TWP would likely not overlap with other project decommissioning in the vicinity (i.e., all projects would not likely have the same expected annual life), since the Proposed Action itself would generate significant daily NOx emissions during construction, it is assumed that the Proposed action would result in cumulatively considerable emissions during short-term decommissioning activities as well.

4.2.6 Mitigation Measures

All construction projects in eastern Kern County must comply with EKAPCD Rule 402 for fugitive dust. Amended on November 3, 2004, the Fugitive Dust Rule 402 requires actions to prevent, reduce, or mitigate emissions of particulate matter into the ambient air from anthropogenic activities capable of generating fugitive dust. The air quality mitigation measures described in this section are intended to reduce, prevent, or mitigate PM_{10} emissions from the construction phase of the TWP in compliance with Rule 402, and to reduce the NOx emissions from construction equipment. These mitigation measures shall be implemented for all areas of construction activities, both on site and off site.

Air-1: The Applicant shall develop a Fugitive Dust Control Plan in compliance with EKAPCD Rule 402 to reduce PM_{10} and $PM_{2.5}$ emissions during construction. The Fugitive Dust Control Plan shall include:

a) Name(s), address(es), and phone number(s) of person(s) responsible for the preparation, submission, and implementation of the plan;

b) Description and location of operation(s);

c) Listing of all fugitive dust emissions sources included in the operation; and

d) Implementation of the following dust control measures shall be implemented:

   I. All material excavated or graded shall be sufficiently watered to prevent excessive dust. Watering shall occur as needed with complete coverage of disturbed areas. Watering shall occur three times per day on unpaved/untreated roads and on distributed areas with active operations.

   II. All clearing, grading, earth moving, and excavation activities shall cease during periods when dust plumes of 20 percent or greater opacity affect public roads or occupied structures.

   III. All material transported off-site shall be either sufficiently watered or securely covered to prevent excessive dust.

   IV. If more than 5,000 cubic yards of fill material will be imported or exported from the site, then all haul trucks shall be required to exit the site via an access point where a gravel pad or grizzly has been installed.

   V. Areas disturbed by clearing, earth moving, or excavation activities shall be minimized at all times.

   VI. Stockpiles of dirt or other fine loose material shall be stabilized by watering or other appropriate method to prevent wind-blown fugitive dust.

   VII. Where acceptable to the fire department, weed control shall be accomplished by mowing instead of discing, thereby leaving the ground undisturbed and with a mulch covering.

VIII. All on-site unpaved roads and off-site unpaved access roads shall be effectively stabilized of dust emissions using water or chemical stabilizer/suppressant.

IX. Traffic speeds on unpaved roads shall be limited to 15 miles per hour.

X. All soil disturbance will be suspended when winds exceed 25 miles per hour.

XI. Where feasible, plant native vegetative ground cover in disturbed areas to meet the criteria of the revegetation plan.

XII. Pre-moisten, prior to transport, import and export dirt, sand, or loose materials

XIII. Trucks transporting bulk materials will be completely covered unless 2 feet of freeboard space from the top of the container is maintained with no spillage and loss of material. In addition, the cargo compartment of all haul trucks will be cleaned and/or washed at the delivery site after removal of the bulk material.

XIV. All public streets will be swept or cleaned with mechanical sweepers if visible soil material is carried onto them by construction activities or vehicles.

Air-2: The Applicant shall reduce exhaust emissions during construction, in particular, emissions of NOx, when using construction equipment and vehicles by implementing the following measures:

a. Prohibit the use of heavy equipment during first- or second-stage smog alerts and suspend all construction activities during second-stage smog alerts;

b. Maintain equipment engines in proper working order;

c. Limit the hours of operation of heavy-duty equipment and/or the amount of equipment in use to the extent feasible;

d. Require all off-road diesel engines with a rated output of greater than 50 horsepower to, at a minimum, meet the Tier 32 California Emissions Standards for Off-Road Compression Ignition Engines, or. If reasonably available, Tier 23 engines with diesel particulate filters and lean-NO_x catalysts (or, or equivalent control devices)., will be employed onsite Heartland Wind, LLC shall provide verification that the construction fleet meets the requirements as identified as part of this mitigation measure;

e. The owner/operator shall require that all diesel engines be shut off when not in use to reduce emissions from idling;

f. Require that trucks and vehicles in loading or unloading queues have their engines turned off when not in use; and

g. Equip any generators, compressors, or other stationary sources of emissions located within 100 feet of a residence or other sensitive receptor with a control system to reduce normal exhaust emissions.

4.2.7 Residual Impacts After Mitigation

Long-term operational emissions associated with Alternatives 1 or 2 would be less than significant without mitigation measure implementation. However, for the short-term construction phase of development, the residual impacts after mitigation are discussed below.

Alternative 1: Proposed Action

Mitigated construction emissions are depicted below in Tables 4.2-13 and 4.2-14. Implementation of Mitigation Measure Air-1 would ensure that daily fugitive dust emissions associated with construction would be reduced by at least 50 percent and consequently. Implementation of Mitigation Measure Air-2 would reduce NOx emissions from construction equipment by at least 40 percent. Daily emissions of NOx, and cumulative emissions of NOx, PM, and VOCs would remain significant when considered in conjunction with construction of the related cumulative past, present, or reasonably foreseeable, probable future projects.

TABLE 4.2-13
ALTERNATIVE 1: MITIGATED ESTIMATED DAILY REGIONAL CONSTRUCTION EMISSIONS (pounds per day)[a]

Emission Sources	ROG	NO_x	CO	SOx	PM_{10}	$PM_{2.5}$
Off-Road Sources						
Mass Site Grading: Roads and Pads	44	211	205	<1	80	25
Electrical Trenching	10	52	50	<1	3	3
Building Construction: Turbine Installation	30	159	108	<1	7	7
Fine Site Grading	25	120	123	<1	76	22
Maximum Off-road Emissions	44	211	205	<1	90	25
Mobile Sources						
Delivery Trucks and Employee Commutes	1	3	11	<1	45	5
Total Emissions						
Maximum Regional Total	45	214	216	<1	125	30
EKAPCD Thresholds	137	137	NA	NA	NA	NA
Exceeds Thresholds (Yes or No)?	No	**Yes**	NA	NA	NA	NA

a Values in **bold** are in excess of the applicable EKAPCD threshold. NA = Not Available. PM emissions assume compliance with EKAPCD Rule 402 by watering exposed surfaces three times daily and limiting vehicle speeds on unpaved roads to 15 mph. Please see Appendix H for additional information.

SOURCE: Sapphos Environmental, Inc. 2014.

TABLE 4.2-14
ALTERNATIVE 1: MITIGATED ESTIMATED ANNUAL REGIONAL CONSTRUCTION EMISSIONS (tons per year)[a]

Emission Sources	ROG	NO_x	CO	SOx	PM_{10}	$PM_{2.5}$
Maximum Off-road Emissions	2	8	6	0	2	1
Delivery Trucks and Employee Commutes	<1	<1	2	0	8	1
Maximum Regional Total	2	8	8	0	10	2
EKAPCD Thresholds	25	25	100	2727	15	NA
Exceeds Thresholds (Yes or No)?	No	No	No	No	No	NA

a Values in **bold** are in excess of the applicable EKAPCD threshold. NA = Not Available. PM emissions assume compliance with EKAPCD Rule 402 by watering exposed surfaces three times daily and limiting vehicle speeds on unpaved roads to 15 mph. Please see Appendix H for additional information.

SOURCE: Sapphos Environmental, Inc. 2014.

Alternative 2: 37 Wind Turbine Generators

Mitigated construction emissions for Alternative 2 are depicted below in Tables 4.2-15 and 4.2-16. Implementation of Mitigation Measure Air-1 would ensure that daily fugitive dust emissions associated with construction would be reduced by at least 50 percent. Implementation of Mitigation Measure Air-2 would reduce NOx emissions from construction equipment by up to 40 percent. Daily emissions of NOx, and cumulative emissions of NOx, PM_{10}, and VOCs would remain significant when considered in conjunction with construction of the related past, present, or reasonably foreseeable, probable future projects.

TABLE 4.2-15
ALTERNATIVE 2: MITIGATED ESTIMATED DAILY REGIONAL CONSTRUCTION EMISSIONS (pounds per day)[a]

Emission Sources	ROG	NO_x	CO	SOx	PM_{10}	$PM_{2.5}$
Off-Road Sources						
Mass Site Grading: Roads and Pads	41	195	191	<1	74	23
Electrical Trenching[b]	13	60	63	<1	4	3
Building Construction: Turbine Installation	28	148	101	<1	7	6
Fine Site Grading	23	111	114	<1	70	20
Maximum Off-road Emissions	41	195	191	<1	74	23
Mobile Sources						
Delivery Trucks and Employee Commutes	1	3	11	<1	45	5
Total Emissions						
Maximum Regional Total	44	198	202	<1	119	28
EKAPCD Thresholds	137	137	NA	NA	NA	NA
Exceeds Thresholds (Yes or No)?	No	**Yes**	No	No	No	No

a Values in **bold** are in excess of the applicable EKAPCD threshold. NA = Not Available. PM emissions assume compliance with EKAPCD Rule 402 by watering exposed surfaces three times daily and limiting vehicle speeds on unpaved roads to 15 mph. Please see the 2013 addendum in Appendix H for additional information.

b. Emissions for the electrical trenching construction phase for Alternative 2 is higher than that of Alternative 1 because the overall daily hours for construction were reduced proportionately to account for the slight reduction in the area disturbed. However, as a result, the URBEMIS model increased the load factor on the equipment to compensate for the reduced number of hours.

SOURCE: Sapphos Environmental, Inc. 2014.

TABLE 4.2-16
ALTERNATIVE 2: MITIGATED ESTIMATED ANNUAL REGIONAL CONSTRUCTION EMISSIONS (tons per year)[a]

Emission Sources	ROG	NO_x	CO	SOx	PM_{10}	$PM_{2.5}$
Maximum Off-road Emissions	2	8	6	0	2	1
Delivery Trucks and Employee Commutes	<1	<1	2	0	8	1
Maximum Regional Total	2	8	8	0	10	2
EKAPCD Thresholds	25	25	100	2727	15	NA
Exceeds Thresholds (Yes or No)?	No	No	No	No	No	NA

a Values in **bold** are in excess of the applicable EKAPCD threshold. NA = Not Available. PM emissions assume compliance with EKAPCD Rule 402 by watering exposed surfaces three times daily and limiting vehicle speeds on unpaved roads to 15 mph. Please see Appendix H for additional information.

SOURCE: Sapphos Environmental, Inc. 2014.

4.3 Impacts to Global Climate Change

4.3.1 Methodology for Analysis

This section addresses the direct and indirect greenhouse gas (GHG) emissions impacts of the TWP and alternatives. The Proposed Action's global climate change impacts were first analyzed qualitatively considering the Proposed Action's operational scenario, size, and location. To quantify the amount of GHG emissions contributed by construction and operation of the Proposed Action, the URBEMIS 2007 emissions model, the EMFAC 2007 model, and the California Climate Action Registry (CCAR) General Reporting Protocol were used. In addition, the role of the Proposed Action in reducing GHG emissions through the generation of renewable energy was analyzed based on the anticipated energy production that will be generated during its operational phase from 2014 to 2043. The Proposed Action would be expected to have the potential to result in significant impacts related to global climate change if the Proposed Action conflicts with the goal of reducing California's GHG emissions to the 1990 levels (427 million metric tons CO_2e, which is equivalent to approximately 10 tons CO_2e per capita) by 2020 as required by AB 32. For the purposes of the analysis presented in this document, the suggested reporting threshold of 25,000 metric tons CO_2e per year will be used as a quantitative threshold to assist with determining significance. The reporting threshold was selected because it corresponds to the threshold set by USEPA for the Mandatory Reporting of GHG Rule.

4.3.2 Discussion of Direct and Indirect Impacts

Alternative 1- Proposed Action (40 WTGs)

Qualitative Analysis of GHGs

As described in Appendix H, the Proposed Action's incremental impact to GHG emissions would be potentially significant if the size, nature, or duration of the construction phase would emit a substantial amount of GHGs. The construction phase of the Proposed Action would take approximately four months to complete and would cover portions of the 1,207-acre TWP site. During construction, heavy-duty equipment would be operated, which, together with the large area under construction, would be expected to produce significant GHG emissions. Therefore, the Proposed Action's construction phase would have the potential to result in substantial increases in GHG emissions, and a quantitative analysis is warranted.

During the operational phase, the Proposed Action's GHG emissions would be expected to be below the level of significance. The Proposed Action is intended to produce a maximum of 60 MW of electricity from wind energy turbines. Therefore, although the use of maintenance equipment for the Proposed Action would be expected to emit GHGs, the operational phase would be expected to result in a net decrease in regional GHG emissions due to the generation of renewable energy that is intended to reduce the use of fossil fuels for electricity generation. Operation of the Proposed Action would not be expected to have a significant detrimental impact upon GHG emissions, and would reduce GHG emissions in compliance with the goals of AB 32

by providing an additional source of renewable energy, which would reduce GHG emissions compared to a business-as-usual scenario.

Quantitative Analysis of GHGs

The CARB URBEMIS 2007, version 9.2.4, was used to estimate construction emissions from grading, electrical trenching, construction of roads and pads, and installation of wind turbines. URBEMIS 2007 was also used to estimate the Proposed Action mobile and operational emissions. The CARB EMFAC 2007 model, version 2.3, which is embedded within the URBEMIS model, includes emission factors for CO_2 and criteria pollutants and was used to evaluate the Proposed Action's GHG emission level contributed by mobile sources, such as passenger cars and maintenance vehicles, based on the expected vehicle fleet mix, vehicle speeds, commute distances, and temperature conditions for the estimated start date of construction of the Proposed Action.

Annual GHG emissions and potential savings associated with operation of the Proposed Action were quantified using GHG emission factors recommended in CCAR General Reporting Protocol, version 3.1, dated January 2009. The Proposed Action was assumed to have a generating capacity of up to 60 MW. Assuming that 100 percent of the electricity produced by the Proposed Action would replace electricity that would otherwise have been generated from conventional energy sources currently used in California, the potential GHG savings from operation of the Proposed Action were calculated by quantifying the GHG emissions that otherwise would have been generated in a no-project scenario.

Construction and Operations and Maintenance

The TWP would generate direct GHG emissions during construction and operations. 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 haul trips and construction employee commuting). As a wind energy project, the Proposed Action would have no primary direct CO_2 emissions from electricity production during operation, but direct GHG emissions during operation would include off-road equipment and on-road vehicles use necessary for inspection and maintenance. Indirect GHG emission impacts would include a large reduction in GHG emissions due to the displacement of electricity generated by fossil fuel-fired power plants, as well as a small increase due to the loss of carbon uptake from the removal of vegetation.

Based on emissions modeling by Sapphos Environmental, Inc., included as Appendix H, construction activities would result in a maximum of approximately 63,036 pounds per day, or 10,443 metric tons per year, of CO_2 emissions, which is equivalent to 38,292 metric tons of CO_2e per year, as shown in Table 4.3-1. Operation of the Proposed Action would result in approximately 4,757 pounds per day of CO_2 emissions, which is equivalent to 788 metric tons per year, which is equivalent to 2,900 metric tons of CO_2e per year, as shown in Table 4.3-1. The Proposed Action is expected to have a 30-year lifetime. It is anticipated that operation of the Proposed Action would result in approximately 86,700 metric tons of CO_2e over its lifetime. However, as a potential producer of renewable energy, the Proposed Action would also be

expected to prevent the emission of 60,423 metric tons of CO_2 per year, or 221,550 metric tons of CO_2e per year, that otherwise would be emitted as a result of electricity production from non-renewable sources in a no-project scenario. Since the Proposed Action is expected to have a 30-year lifetime, the Proposed Action would be expected to prevent approximately 6,646,500 metric tons of CO_2e over a 30-year period. Therefore, the overall impact of operation of the Proposed Action would be expected to have no negative impact upon GHG emissions, would not trigger the reference point of 25,000 metric tons of direct CO_2e that would warrant detailed consideration in the NEPA review set forth in the draft guidance by CEQ, and would reduce GHG emissions in compliance with AB 32. Therefore, it is expected that the overall GHG emissions resulting from construction and operation of the Proposed Action would be consistent with CEQ's guidance and would be below the level of significance.

TABLE 4.3-1
ALTERNATIVE 1 GHG EMISSIONS[a]

Emission Sources	CO_2 Emissions		CO_2e Metric Tons/Year
	Pounds/Day	Metric Tons/Year	
Construction Emissions Sources			
Maximum Construction Emissions	63,036	10,443	38,338
Operational Sources			
Operational equipment	4,465	740	2,715
Mobile Sources	293	48	178
Maximum Operational Emissions	4,758	788	2,893
Combined Sources			
Maximum Total Emissions	67,794	11,231	41,231

A. Please see the 2013 addendum in Appendix H for additional information.

SOURCE: Sapphos Environmental, Inc. 2014.

Decommissioning

The expected life of the proposed TWP is 30 years. In the event that the site should be removed from power generation service, it would be made suitable for reclamation. Equipment to be utilized on the TWP site would be similar to those used during construction activities. As such, decommissioning activities would generate temporary GHG emissions. These emissions would be similar to but less than those generated during construction as the activities would be less intense and of shorter duration.

Alternative 2 - Modified Proposed Action (37 WTGs)

Alternative 2 would be similar to the Proposed Action; however under this alternative, the overall size would be reduced by 94 acres and fewer wind turbine generators would be emplaced. As a result, construction may occur for a shorter-period of time. The qualitative and decommissioning analysis would be the same as that discussed above for the Proposed Action. The quantitative

analysis, including modeled GHG emissions associated with construction and operation of Alternative 2, is included below.

Construction and Operations and Maintenance

Based on updated emissions modeling by Sapphos Environmental, Inc., included as an addendum in Appendix H, construction and operational emissions are depicted in Table 4.3-2 below. Construction activities would result in a maximum of approximately 58,612 pounds per day, or 9,710 metric tons per year, of CO_2 emissions, which is equivalent to 35,604 metric tons of CO_2e per year. Operation of this alternative would result in approximately 4,757 pounds per day of CO_2 emissions, which is equivalent to 788 metric tons per year, which is equivalent to 2,890 metric tons of CO_2e per year, as shown in Table 4.3-2. Alternative 2 is also expected to have a 30-year lifetime. It is anticipated that operations would result in approximately 86,700 metric tons of CO_2e over its lifetime. However, as a potential producer of renewable energy, the alternative would also be expected to prevent the emission of 45,317 metric tons of CO_2 per year, or 166,163 metric tons of CO_2e per year, that otherwise would be emitted as a result of electricity production from non-renewable sources in a no-project scenario. Alternative 2 would be expected to prevent approximately 4,984,881 metric tons of CO_2e over a 30-year period. Therefore, the overall impact of operation of the alternative would be expected to have no negative impact upon GHG emissions, would not trigger the reference point of 25,000 metric tons of direct CO_2e that would warrant detailed consideration in the NEPA review set forth in the draft guidance by CEQ, and would reduce GHG emissions in compliance with AB 32. Therefore, it is expected that the overall GHG emissions resulting from construction and operation of Alternative 2 would be consistent with CEQ's guidance and would be below the level of significance.

TABLE 4.3-2
ALTERNATIVE 2 GHG EMISSIONS[a]

Emission Sources	CO_2 Emissions		CO_2e Metric Tons/Year
	Pounds/Day	Metric Tons/Year	
Construction Emissions Sources			
Maximum Construction Emissions	58,612	9,710	35,604
Operational Sources			
Operational equipment	4,466	740	2,713
Mobile Sources	293	48	178
Maximum Operational Emissions	4,757	788	2,890
Combined Sources			
Maximum Total Emissions	63,369	10,499	38,495

a. Please see the 2013 addendum in Appendix H for additional information.

SOURCE: Sapphos Environmental, Inc. 2014.

Alternative 3 - No Action Alternative

If Alternative 3 is implemented, no changes to the site would occur, as the BLM would not approve the proposed TWP and would not amend the CDCA Plan. As such, no wind energy project would be constructed, and the existing environmental setting would be maintained. As no development would occur under this condition, no impacts to global climate change would occur.

Alternative 4 - No Project; Unsuitable

If Alternative 4 is implemented, the BLM would not approve the proposed TWP and would amend the CDCA Plan to preclude development of another wind project on the site. As such, no wind energy project would be constructed at the site, and the existing environmental setting would be maintained. As no development at the site would occur under this condition, no impacts to global climate change would occur.

Alternative 5 - No Project; Suitable

If Alternative 5 is implemented, the BLM would not approve the proposed TWP and would amend the CDCA Plan to permit the development of another wind project on the site in the future. As such, if the BLM were to approve another wind energy project in the future, it is assumed that impacts could be similar to the Proposed Action.

4.3.3 Cumulative Impacts

This entire GHG impact assessment is a cumulative impact assessment; there are no direct localized impacts from project-level GHG emissions. The TWP alone would not be sufficient to influence global climate, but would emit GHGs and, therefore, has been analyzed as a potential cumulative impact in the context of long term global impacts and existing GHG regulatory requirements and GHG energy policies as described in the previous sections.

4.3.4 Mitigation Measures

Operation of the TWP would not be expected to have any adverse impacts upon GHG emissions, and would reduce GHG emissions in compliance with the goals of AB 32. Therefore, no mitigation measures are required.

4.3.5 Residual Impacts After Mitigation

No GHG emissions related mitigation is recommended as the TWP's impacts would be beneficial. The Proposed Action would have no unavoidable adverse impacts related to climate change.

4.4 Impacts on Cultural Resources

4.4.1 Methodology for Analysis

Evaluation of potential impacts of the Proposed Action and alternatives on cultural resources is based in part on review of legal responsibilities established under NEPA, the NHPA (42 USC §§4321, 4331 - 4335), and other relevant authorities. To carry out NEPA, the federal government has a "continuing responsibility… to use all practicable means, consistent with other essential considerations of national policy, to improve and coordinate Federal plans, functions, programs, and resources to the end that the Nation may… preserve important historic, cultural, and natural aspects of our national heritage…." (42 USC 4331(b)(4)). NEPA requires the federal agency to take a "hard look" at the impacts on cultural resources associated with a proposed action and alternatives. The analysis takes into account direct, indirect, and cumulative effects.

For purposes of NEPA, this DEIS/PA includes information gathered as part of the NHPA Section 106 process about historic properties and the potential effects to such properties from the proposed undertaking. However, since cultural resources need not be determined eligible for the NRHP to receive consideration under NEPA, this analysis considers all cultural resources identified during the Class III surveys conducted for the proposed Project, and not solely those resources considered "historic properties" under NHPA.

The basic regulatory process for assessing impacts on cultural resources consists of the following five steps:

1. Determining the appropriate geographic extent (Area of Potential Effects) of the analysis for the proposed action and for each alternative action under consideration (for purposes of NEPA, the Project area is equivalent to the APE, which is illustrated on Figure 4.4-1); see Chapter 3.4 Cultural Resources for a description of the APE

2. Identifying cultural resources within each such geographic area;

3. Determining the historical significance of the cultural resources in the inventory for each geographic area, unless the construction, operation and maintenance, and decommissioning and closure of the proposed or alternative actions will avoid particular resources;

4. Assessing the character and the severity of the effects of the proposed and alternative actions on the historically significant cultural resources in each respective inventory that cannot be avoided; and

5. Developing measures that would resolve those effects that are found to be significant.

Further details of each of these phases follow below and help provide the parameters of the present analysis.

Assessing Effects

The core of the cultural resources analysis under NEPA and Section 106 of the NHPA is the assessment of the character of the effects that a proposed action or alternative action may have on cultural resources. The BLM is using the definition of adverse effect in the Section 106 regulations to assess impacts of the proposed action or alternatives for those cultural resources that the BLM has identified as historic properties eligible for or listed in the NRHP. The Section 106 regulations describe an adverse effect as "an undertaking [that] may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the [NRHP] in a manner that would diminish the integrity of the property's location, setting, materials, workmanship, feeling, or association."[1] 36 CFR § 800.5(a)(1). This consideration should apply to all the qualifying characteristics of an historic property. Adverse effects also may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative. In accordance with 36 CFR Section 800.5, an adverse effect occurs if one or more of the following would result from implementation of the Proposed Action:

1. An undertaking has an effect on a historic property when the undertaking may alter characteristics of the property that may qualify the property for inclusion in the National Register of Historic Places (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.

2. 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:

    a. Physical destruction, damage, or alteration of all or part of the property

    b. 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

    c. Introduction of visual, audible, or atmospheric elements that are out of character with the property or that alter its setting

    d. Neglect of the property, resulting in its deterioration or destruction

    e. Transfer, lease, or sale of the property

[1] *Setting* is the physical environment of a historic property. It refers to the character of a place in which the property played its historical role. *Feeling* is the property's expression of the aesthetic or historic sense of a particular period of time. It results from the presence of physical features that, taken together, convey the property's historic character. *Association* is the direct link between an important historic event or person and a historic property. A property retains association if it is the place where the event or activity occurred and is sufficiently intact to convey that relationship to an observer. Like feeling, association requires the presence of physical features that convey a property's historic character (NPS, 1990).

4.4.2 Discussion of Direct and Indirect Impacts

Alternative 1 - Proposed Action (40 WTGs)

Six prehistoric cultural resources (CA-KER-1906, TY-Site-1, TY-Site-2, TY-Site-3, TY-Site-4, and TY-Isolate-1) were located within the Area of Potential Affect (APE) during the three Class III surveys for the proposed Project (Sapphos, 2013). These resources are not located in the area of the direct impact zone, also referred to as the Project's footprint. The Project area consists generally of low to moderate cultural sensitivity, with greater prehistoric sensitivity located primarily in the northeast along the larger seasonal washes. The five prehistoric archaeological sites are all bedrock milling stations, located primarily next to seasonal washes, with one associated with an extensive lithic scatter deposit. These sites are generally representative of food-processing activities and were an important aspect to the seasonal resource procurement patterns of native populations. The sites are localized with firmly established boundaries, and none would be directly affected by the proposed Project because all Project components avoid these resources. There would also be no indirect effects, such as a significant change in the viewshed associated with the sites.

The two historic-period sites located within the APE are both refuse scatters and appear to represent debris likely associated with livestock grazing and recreational ORV use. The sites are localized with firmly established boundaries, and none would be directly affected by the proposed Project because all Project components avoid these resources. There would also be no indirect effects, such as a significant change in the viewshed associated with the sites. As a result of Project planning and design considerations by the Applicant, all Project components will avoid all of the identified cultural resources. Thus, no direct effects to these resources will occur during Project construction, operation, maintenance or decommissioning activities. Likewise, there should be no indirect effects occurring to these resources.

No historic-period resources of the built environment (buildings, structures, objects, or districts) occur within the APE. Consultation between the BLM and the State Historic Preservation Officer (SHPO), as required by the regulations 36 CFR Part 800, regarding the identification, eligibility, and effects assessments of effects has been initiated. The BLM has asked the SHPO to concur with a determination that there will be no adverse effects to historic properties either listed upon or eligible for the National Register of Historic Places, caused by the TWP.

The proposed TWP will not have adverse effects on known cultural resources, including archaeological resources, nor on properties eligible for listing in the NRHP. However, the potential for previously undocumented archaeological resources and/or human remains to be discovered during the Project's construction and decommissioning does exist. Thus, if unanticipated or unrecorded cultural resources and/or human remains are encountered during Project implementation, Mitigation Measure CR-1 and CR-2 shall be implemented. These Mitigation Measures require that all ground-disturbing activity in the vicinity of the find should halt and the BLM notified to ensure compliance with relevant state and federal laws and

regulations, and to allow time needed to evaluate the discovery and recommend subsequent courses of action.

Alternative 2 - Modified Proposed Action (37 WTGs)

Alternative 2 consists of a reduced acreage alternative to the Proposed Action. Construction would take place on same site as Alternative 1, except the southwest 94-acre parcel would be eliminated from the project. Potential impacts to cultural resources for Alternative 2 would be the same as those identified for the Proposed Action.

Alternative 3 - No Action Alternative

Under this alternative, the TWP would not be constructed and the CDCA would not be amended. Existing conditions relevant to cultural resources would continue on the site.

Alternative 4 - No Project; Unsuitable

Under this alternative, the TWP would not be constructed and the CDCA Plan would be amended to preclude any future wind energy development on the site. Therefore, no impacts associated with the TWP would occur. Existing conditions relevant to cultural resources would continue on the site.

Alternative 5 - No Project; Suitable

Under this alternative, the TWP would not be constructed, but the CDCA Plan would be amended to permit future wind energy development at the site. Therefore, while there would be no impacts associated with the TWP, some future wind energy development project, which would be subject to full environmental review at some time in the future, could have potential impacts to cultural resources.

4.4.3 Cumulative Impacts

Geographic Extent/Context

The geographic scope of the cumulative effects analysis for cultural resources is the Project area, which provides a reasonable context wherein cumulative actions could affect cultural resources. The APE consists of approximately 354.1 acres (0.55 square miles) located within 3 block areas of a larger ROW grant area of approximately 1,207 acres (1.9 square miles).

Existing Cumulative Conditions

Cumulative conditions to cultural resources involve the disturbance of culturally significant resources, and alteration of the historic and cultural landscape of the area over time. In the past, cultural resources have sometimes been damaged or destroyed by development projects, resulting in the loss of potential knowledge. Development projects in the region have resulted in the damage or destruction of cultural resources, and the area has hosted various human activities in the past and certain activities, such as recreation, continue today. In recent times, the severity of

impacts to previously unknown cultural resources has been reduced by implementing mitigation measures requiring construction monitoring, evaluation of resources discovered during monitoring, and avoidance or data recovery for significant resources.

Reasonably Foreseeable Projects

Table 4.1-1 provides a listing of current and 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 reasonably foreseeable. Many 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 projects described in Table 4.1-1, their effects were considered in the cumulative impacts analyses in this DEIS/PA. The projects that are located within the geographic extent for cumulative analysis of cultural resources are presented in Table 4.1-2.

Construction, Operation and Maintenance, Decommissioning

Cumulative impacts on cultural resources take into account the Project's impacts as well as those likely to occur as a result of other existing, proposed and reasonably foreseeable projects. When analyzing cumulative impacts on cultural resources, an assessment is made of the impacts on individual resources as well as the inventory of cultural resources within the cumulative impact analysis area.

The Project vicinity contains a significant archaeological and historical record that, in many cases, has not been well documented or recorded. Thus, there is the potential for ongoing and future development projects in the vicinity to disturb landscapes that may contain known or unknown cultural resources. The proposed Project will not have an adverse effect on known historic properties, including archaeological resources, or on cultural resources during construction, operation and maintenance, or decommissioning. Mitigation Measures CR-1 and CR-2 would ensure that archaeological resources and human remains accidentally discovered during construction would be appropriately treated. Therefore, with implementation of Mitigation Measures CR-1 and CR-2, the proposed Project would not have a cumulatively considerable contribution to impacts to archaeological and historical resources. Should other projects in the cumulative impact analysis area not implement similar measures, the cumulative scenario could result in a significant cumulative impact; however, the Project, with mitigation, would not contribute to the cumulative impact.

4.4.4 Mitigation Measures

CR-1: If unexpected cultural resources are encountered during project construction, the applicant shall notify the BLM and all activity within 100 feet of the find shall halt until it can be evaluated by a qualified archaeologist and a Native American representative. The BLM shall follow the procedures outlined for Post-Review Discovery as stated in 36 CFR 800.13(b). Prehistoric archaeological materials might include obsidian and chert flaked-

stone tools (e.g., projectile points, knives, scrapers) or toolmaking debris; culturally darkened soil ("midden") containing heat-affected rocks or artifacts; and stone milling equipment (e.g., mortars, pestles, handstones, or milling slabs); and battered stone tools, such as hammerstones and pitted stones. Historic-period materials might include stone, concrete, or adobe footings and walls; filled wells or privies; and deposits of metal, glass, and/or ceramic refuse. If the archaeologist and Native American representative determine that the resource may be significant and cannot be avoided, they shall notify the BLM and an appropriate treatment plan for the resource shall be developed by the Applicant in consultation with the BLM and the archaeologist. Measures in the treatment plan could include preservation in place (capping) and/or data recovery. The archaeologist shall consult with Native American representatives in determining appropriate treatment for prehistoric or Native American cultural resources. Ground disturbance shall not resume within 100 feet of the find until an agreement has been reached as to the appropriate treatment of the find.

CR-2: In the event that human skeletal remains are encountered, the Applicant is required by Health and Safety Code Section 7050.5, Public Resources Code Section 5097.98, and Title 14 California Code of Regulations Section 15064.5(e) to immediately notify the County coroner. The Native American Graves Protection and Repatriation Act also applies to Native American human remains discovered on Federal land. Upon determination by the County Coroner that the remains are Native American, the coroner shall contact the California Native American Heritage Commission, pursuant to subdivision (c) of §7050.5 of the Health and Safety Code and the County Coordinator of Indian Affairs. No further disturbance of the site shall be made except as authorized by the County Coordinator of Indian Affairs in accordance with the provisions of state law.

4.4.5 Residual Impacts after Mitigation

The proposed TWP would avoid direct and indirect impacts to all known cultural resources. However, the potential remains for impacts to unknown resources that may be discovered at the Project site during construction. Implementation of the mitigation measures presented above will minimize the potential for adverse impacts to previously unknown resources.

4.5 Environmental Justice

4.5.1 Methodology for Analysis

This EIS uses a demographic screening analysis to determine whether a low-income and/or minority population exists within the potentially affected area of the TWP.

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," directs Federal agencies to assess whether their actions have disproportionately high and adverse human health or environmental effects on minority and low-income populations. The Presidential memorandum accompanying the executive order states that "each Federal agency shall analyze the environmental effects, including human health, economic and social effects, of Federal actions, including effects on minority communities and low-income communities, when such analysis is required by NEPA." The demographic screening to determine the presence of minority and low income populations is based on information contained in two documents: *Environmental Justice: Guidance Under the National Environmental Policy Act* (Council on Environmental Quality, December, 1997) and *Guidance for Incorporating Environmental Justice Concerns in EPA's Compliance Analyses* (U.S. Environmental Protection Agency, April, 1998). The screening process relies on Year 2010 U.S. Census data to determine the presence of minority and below-poverty-level populations.

In addition to the demographic screening analysis, this DEIS/PA follows the steps recommended by the U.S. EPA's guidance documents, which recommend outreach and involvement, and, if warranted, a detailed examination of the distribution of impacts on segments of the population.

The environmental justice analysis has reviewed the findings and analysis for the following 11 sections in the DEIS/PA: Air Quality, Hazardous Materials, Land Use, Noise, Public Health, Social and Economics, Soils and Water, Traffic and Transportation, Transmission Line Safety/Nuisance, Visual Resources, and Waste Management. In its review of each section, the environmental justice analysis considered potential impacts and mitigation measures, and whether they would result in a disproportionately high and adverse impact on a minority or special status population.

4.5.2 Discussion of Direct and Indirect Impacts

Alternative 1 - Proposed Action (40 WTGs)

The minority population within Census Tract 060290060.05 is 30.5 percent which is less than 50 percent of the total population. However, the City of Tehachapi and the County of Kern as a whole have minority populations of more than 50 percent of their total population and represent communities of concern for the purpose of environmental justice analysis. Moreover, Census Tract 06029006 0.05 has a proportion of low-income residents (percentage living below the poverty level) of 8.4 percent, which is under half that for Kern County as a whole. Consequently, Census Tract

060290060.05 is not identified as a low income population, and does not represent a community of concern for the environmental justice analysis.

In the context of the siting of a wind energy development project, the primary environmental justice issues typically would be potential air or water issues that could adversely affect the health of nearby populations. Other issues could be any potential residential or business displacements, and noise impacts on populations near the power plant or ancillary facilities.

The TWP would not result in significant air quality impacts or impacts to surrounding communities from emissions of toxic air contaminants. The Proposed Action would not involve wastewater discharges that could affect drinking water supplies or other water bodies. As a result of the proposed design, mitigation measures, and the absence of sensitive receptors nearby, there would be no significant noise impacts. The Proposed Action would not displace any homes or businesses. For these reasons, the rural and remote character of the area, and the low population concentration near the site, the Proposed Action would not result in disproportionate adverse impacts on low-income and minority populations. Therefore, no environmental justice impacts would be associated with the Proposed Action.

Alternative 2 - Modified Proposed Action (37 WTGs)

Alternative 2 would eliminate the southwest 94-acre parcel from the Proposed Action. The difference with regard to direct and indirect impacts between this alternative and the Proposed Action would be directly related to the total acreage of site disturbance for each alternative. While removing this parcel would reduce the overall size and boundary of the site, Alternative 2 would be located within identical localized and regional demographic boundaries as the Proposed Action with respect to environmental justice. This reduction in site size would not result in any new or increased impacts compared to the Proposed Action and would result in either reduced or identical impacts as the Proposed Action. As such (as analyzed under Alternative 1, above), no populations with a large minority percentage or low-income percentage of greater than 50 percent could be disproportionately adversely affected at either a localized or regional level by construction, operation and maintenance, or decommissioning of Alternative 2.

Alternative 3 - No Action Alternative

No impacts related to environmental justice would occur since the TWP would not be constructed and operated.

Alternative 4 - No Project; Unsuitable

No impacts related to environmental justice would occur since the TWP would not be constructed and operated. Furthermore, no impacts would occur from future wind energy development.

Alternative 5 - No Project; Suitable

No impacts related to environmental justice would occur since the TWP would not be constructed; however the site would be determined to be suitable for future wind energy

development. Future impacts would be possible should another application be received. Impacts could be comparable to, greater, or less than the nature and intensity of the Proposed Action.

4.5.3 Cumulative Impacts

Geographic Extent/Context

As described in Section 3.5, the affected area for project-specific environmental justice impacts would be areas within one mile of the TWP. Therefore, impacts of past, present, and reasonably foreseeable future development within this area has the potential to combine with impacts of the Proposed Action to disproportionately affect minority and low-income populations. Additionally, the TWP or Alternative 2 could combine with impacts of other projects from a regional level to overlap with the affected regional area of the TWP. The cumulative projects identified in Table 4.1-1 predominantly occur in Kern County. Therefore, the geographic extent of the TWP from a regional perspective for consideration of cumulative environmental justice impacts would be Kern County.

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. As the cumulative analysis area for environmental justice impacts is both localized (one mile radius from the TWP) and regional (Kern County), past and present development contributing to the cumulative conditions for environmental justice in the cumulative analysis area would be the larger of the two (i.e., development in the cities and communities of Kern County). As described in Section 3.5 and above, the minority and low-income populations within this affected area would be less than 50 percent compared to the total population at the local level as well as the regional level.

Reasonably Foreseeable Projects

Table 4.1-1 provides a list of current and reasonably foreseeable projects, including other proposed or approved renewable energy projects, projects located on BLM lands, proposed or approved projects within the County's jurisdiction, and other actions/activities that the Lead Agency considers to be reasonably foreseeable. As discussed above, the cumulative projects relevant to the geographic extent of this cumulative analysis of environmental justice impacts would be those located within Kern County as identified in Table 4.1-1. Many of the projects presented in Table 4.1-1 and considered part of the baseline conditions 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 TWP were considered in the cumulative impacts analyses in this DEIS/PA.

Construction, Operation and Maintenance, Decommissioning

While the projects identified within Table 4.1-1 could result in adverse impacts, those located within a localized level of the TWP would also be located within Census Tract 060290060.05. As presented in Table 3.5-1 and discussed, Census Tract 060290060.05 in Kern County has a minority population of less than 50 percent (30.5 percent), which is lower than the minority populations of Kern County (61.4 percent). Furthermore, Census Tract 060290060.05 in Kern County has a low-income population of less than 50 percent (8.4 percent), which is much lower than low-income populations of Kern County (22.2 percent). Therefore, the TWP, in combination with other localized cumulative projects in the region identified in Table 4.1-1, would not have disproportionate impacts on minority and/or low-income populations at a localized level and in comparison to the entire region.

Impacts associated with construction, operation and maintenance, or decommissioning of the TWP would not result in disproportionate adverse effects on minority and/or low-income populations and the TWP/alternatives will not contribute to cumulative impacts.

4.5.4 Mitigation Measures

Given the absence of environmental justice impacts, no mitigation measures are required.

4.5.5 Residual Impacts After Mitigation

No adverse impacts related to environmental justice would occur.

4.6 Lands and Realty

4.6.1 Methodology for Analysis

This section discusses potential impacts on authorized lands and realty uses or conflicts with applicable land use plans, policies, or regulations that would occur with implementation of the TWP. The BLM Master Title Plats (MTPs), Historical Indices (HIs), and the automated Lands and Minerals Legacy Rehost (LR2000) and Automated Mining Claims systems were reviewed to obtain information related to pending and authorized uses on the BLM-administered lands that would be affected by the TWP (BLM, 2011a). The BLM's Washington Office and California State Office web sites provided additional information relating to wind energy on BLM-administered lands (BLM, 1980; BLM, 2005a; BLM, 2005b; BLM 2008; BLM 2011b; BLM 2001c).

Kern County's web site provided information relative to local plans and regulations; additional projects in the region; and environmental analyses conducted for the adjacent Manzana Wind Energy Project (MWEP) and the Pacific Wind Energy Project (PWEP) which are integral to the TWP (Kern County, 1970; Kern County, 1982a; Kern County, 1982b; Kern County, 2007; Kern County, 2010; Kern County, 2011a; Kern County 2011b; Kern County, 2011c; Kern County, 2011d).

The impact assessment was based on known impacts relative to construction, operation, maintenance, and decommissioning of rights-of-way and land use permits on all types of BLM-administered land.

Conflicts associated with other resources such as Livestock Grazing, Recreation, Wildlife Habitat, Vegetation, Air Resources, Cultural Resources, Wild Horses and Burros, etc., are discussed in separate sections of this DEIS/PA in Chapters 3 and 4, as appropriate.

4.6.2 Discussion of Direct and Indirect Impacts

Alternative 1 - Proposed Action (40 WTGs)

Impacts of Authorized Uses

As discussed in Section 3.6, the TWP site is generally characterized as remote, sparsely populated, and rural. Land uses surrounding the Project area consist of the approved MWEP and the PWEP. Authorized uses on the BLM-administered land include a short segment (approximately one-quarter mile) of the Pacific Crest Trail, some movable apiary hives, an access road of unknown dimension with no Holder of record identified, and wind testing and monitoring facilities associated with the TWP. There is no legal public access to the BLM-administered lands because they are surrounded by private land. Therefore, use of the BLM-administered land for recreation or placement of movable apiaries, although authorized by the BLM, is dependent upon the user's ability to secure permission to cross adjacent private land. The exact number of movable apiary hives that would potentially be affected by the TWP is unknown but is expected to be minimal.

The Project would not be constructed within a Section 368 or CDCA Plan designated corridor.

A 960-acre portion of the TWP site is currently permitted for grazing. The amount of permanently disturbed grazing land would total approximately 24 acres, which is minimal compared to the total area permitted for grazing (960 acres). Thus, it is expected that the Project site could continue to be used for grazing following construction of the TWP. Through the process of this DEIS/PA, and proper coordination with the BLM, the Proposed Action would comply with the development standards and requirements identified by the BLM for rangeland management areas. Please refer to sections 3.7 and 4.7, Livestock Grazing, for further information.

The proposed TWP site is located on unclassified lands, which are available for disposal. The CDCA Plan states that unclassified parcels, which do not to contain sensitive resources and would be better used for development purposes will be considered for disposal after appropriate inventories and consultation with local governments are completed. Thus, BLM may decide to dispose of the TWP site even if the ROW is granted and the project is implemented. Unclassified land may be disposed of through competitive bid (sale) at fair-market value, land exchanges, or the land may be transferred to another entity through another action (e.g. Congressional direction, or through an existing law that allows transfer of federal land).

Impacts to Land Use Plans

The Applicant is requesting a ROW grant from the BLM for approximately 1,207 acres of public land. The Project site is within the BLM's California Desert District and within the planning boundaries of the CDCA Plan. If a ROW grant is approved for the Project, then a land use plan amendment also would be required to identify the site in the CDCA Plan as appropriate for the proposed use. The site is located on lands designated Unclassified. The CDCA Plan states that Unclassified lands are managed on a case-by-case basis, and thus, construction of the Proposed Action would not be inconsistent with the Unclassified designation of the Project site. No changes in the Unclassified designation are proposed or would be required prior to approving the requested ROW grant. After the Project has been constructed or decommissioned, the lands within the Project site boundary would again be available for other uses consistent with the applicable the CDCA Plan.

Alternative 2 - Modified Proposed Action (37 WTGs)

Alternative 2 would consist of the same components as the Proposed Action but at a lesser scale, eliminating use of the southwest parcel in section 28 (lot 1 and SW¼SE¼), Township 10 North, Range 15 West, San Bernardino Meridian, Kern County, California. With this alternative, the total number of WTGs would be reduced from 40 to 37; the length of the onsite access road system would be reduced; the length of the onsite electric collection system would be reduced; and the length of the SCADA and fiber optic systems co-located with the electric collection system would be reduced. Potential impacts to lands and realty would be the same as described for the Proposed Action. However, with the reduction of the size of the Project site, less land would be affected.

Alternative 3 - No Action Alternative

Under this alternative, the BLM would not approve the TWP and would not amend the CDCA Plan. As a result, no wind energy project would be constructed. The BLM would continue to have limited ability to manage the isolated parcels of land. Because there would be no amendment to the CDCA Plan and no wind project approved for the site under this alternative, no new structures or facilities would be constructed or operated on the site and no new ground disturbance would occur. As a result, none of the impacts to lands and realty use and land use planning from construction, operation, maintenance, or decommissioning of the TWP would occur.

Alternative 4 - No Project; Unsuitable

Under this alternative, the BLM would not approve the TWP, and the BLM would amend the CDCA Plan to make the site unavailable for future wind energy development. As a result, no wind energy project would be constructed on the site, and the BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan. As such, there would be no adverse impact on lands and realty associated with the TWP.

Alternative 5 - No Project; Suitable

Under this alternative, the BLM would not approve the TWP, but would amend the CDCA Plan to allow for other wind projects on the site in the future. As a result, it is possible that another wind energy project could be constructed on the site. If this were to occur, an assessment of impacts would be undertaken at that time. It is likely that the degree of land disturbance would be comparable to the TWP, and therefore construction and operation impacts to lands and realty would be similar to those of the TWP, although they would occur at some undetermined time in the future.

4.6.3 Cumulative Impacts

Geographic Scope

The geographic scope of the cumulative effects analysis for lands and realty includes the TWP site, linear facilities corridor, CDCA Plan areas bearing the multiple use class designated lands within the Project site and linear facilities corridor.

Past development and common activities on MUC-designated lands in the vicinity of the proposed TWP site include established grazing allotments, and mineral and renewable energy facilities and infrastructure. The potential for impacts to MUC-designated lands has recently increased due to the influx of applications for solar and wind energy facilities.

Existing Cumulative Conditions

Past and present land uses occurring in the region include numerous wind energy and solar energy developments, public and private air strips and airport facilities, Edwards Air Force Base, China Lake Naval Air Weapons Station, and numerous utility easements. Potential cumulative impacts to

lands and realty uses and land use planning surrounding the TWP site may result from the new structures and development activities that could further restrict access to surrounding land uses.

Reasonably Foreseeable Projects

Within the Tehachapi Wind Resource Area (TWRA), several types of development projects could contribute to the cumulative impact of the Proposed Action and alternatives, particularly renewable energy projects, which can affect land and realty.

Table 4.1-1 in Section 4.1, provides a full list of all potential cumulative projects including, wind energy projects that are pending and approved and ranging in size from as little as 60 acres up to an estimated 10,000 acres within the Tehachapi Wind Resource Area (TWRA), from 2005 to present (as of January 2013). As shown in Table 4.1-1, there are pending and approved solar energy facilities ranging in size from two acres up to over 6,000 acres in size, identified within Kern County.

As noted in Table 4.1-2, cumulative impacts to lands and realty include designated utility corridors (e.g., transmission lines, cellular telephone towers, poles), existing ROWs, restriction or preclusion of otherwise allowable use opportunities. Thus, all solar, wind, and transmission line projects listed in Table 4.1-1. Even if environmental review has not been completed for the cumulative projects described in Table 4.1, their effects on land and realty uses and land use planning were considered in the cumulative impacts analyses in this Draft EIS/PA.

Construction, Operation and Maintenance, Decommissioning

Construction of the proposed renewable energy developments in the vicinity of the TWP site that would have the potential to induce cumulative impacts to lands and realty uses and land use planning including thousands of acres of renewable energy projects. It is expected that some of the cumulative projects described in Table 4.1-1 may be under construction the same time as the TWP, which may result in limited access to BLM lands in Kern County and the surrounding area. As a result, there may be short-term impacts to lands and realty uses during construction of those cumulative projects related to the use of lands, and the Proposed Action could contribute to those possible short-term cumulative impacts. However, in consideration of cumulative land use compatibility impacts, the implementation of renewable projects in southern California would occur mostly in undeveloped desert lands or areas of rural development, and would not create physical divisions of established residential communities. In addition, after construction, the TWP site would be restored to pre-project conditions and there would be no conflicts with applicable plans, policies, and regulations.

It is expected that some of the cumulative projects described above may be operational at the same time as the TWP. In particular, the proposed and approved renewable energy projects that would result in the conversion of thousands of acres of desert lands that are currently in vicinity of MUC land use activities. As a result, impacts of the Project may combine with impacts of other projects to result in cumulative impacts to land use, aesthetics, and recreational resources (see Section 4.12, Recreation).

The TWP could contribute to these possible long-term operational cumulative impacts since thousands of acres of land are proposed for solar and wind energy development in Kern County. The Project would not constrain lands or realty for reasonably foreseeable future project in a way that would make them infeasible or that would result in adverse impacts to land use and realty. With approval of the Plan Amendment and ROW grant, there would not be conflicts with applicable plans, policies, and regulations and the TWP would not contribute significantly to cumulative lands and realty uses or land use planning impacts.

Adverse temporary impacts to lands and realty related to decommissioning of the Proposed Action would be similar to construction impacts. Disruptions from the decommissioning of other renewable energy projects would have the potential to combine with the impacts associated with decommissioning activities of the proposed TWP, which would result in a cumulative impact. However, the TWP's contribution to cumulative impacts to lands would be temporary due to the nature of decommissioning activities and ultimate reclamation of the TWP site.

4.6.4 Mitigation Measures

No mitigation measures are required to reduce impacts related to lands and realty and land use planning.

4.6.5 Residual Impacts After Mitigation

There would be no adverse unavoidable impacts to lands and realty uses or land use planning as a result of construction, operation and maintenance, or decommissioning of the TWP.

4.6.6 CDCA Plan Consistency

The Energy Production and Utility Corridors Element of the CDCA Plan requires that newly proposed power facilities not already identified in the CDCA Plan be considered through the plan amendment process. The TWP is not currently identified in the CDCA Plan and, therefore, a plan amendment is required to include the facility as a recognized element within the CDCA Plan. This DEIS/PA will act as the mechanism for complying with this requirement. With such an amendment, the TWP would be in compliance with the CDCA Plan.

The Project site is within the "Unclassified" designation of the CDCA Plan as the lands surrounding the TWP site are private lands under the jurisdiction of Kern County. The "Unclassified" designation consists of scattered and isolated parcels of public land in the CDCA that have not been placed within MUC. Unclassified lands are managed on a case-by-case basis in accordance with the Land Tenure Adjustment Element.

The process for considering amendments to BLM land use plans is described in the agency's Land Use Planning Handbook (BLM, 2005c). The general process for amending a BLM Land Use Plan is as follows:

1. The plan amendment process would be completed in compliance with FLPMA, NEPA, and all other relevant federal law, executive orders, and BLM management policies.

2. The plan amendment process would include an EIS to comply with NEPA.
3. Where existing planning decisions remain valid, those decisions may remain unchanged and would be incorporated into the new plan amendment.
4. The plan amendment would recognize valid existing rights.
5. Native American tribal consultations would be conducted in accordance with policy, and tribal concerns would be given due consideration.
6. Consultation with other agencies with jurisdiction would be conducted throughout the plan amendment process.

Details concerning the proposed amendment for the Project or an alternative are provided in Chapter 2, Proposed Action and Alternatives. This DEIS/PA acts as the mechanism for satisfying NEPA requirements for the CDCA Plan amendment process, and provides the analysis required to support a CDCA Plan amendment to identify the proposed site as suitable or unsuitable for solar development within the Plan.

Decision Criteria for Evaluation of a Proposed Plan Amendment

As identified in Chapter 1, Introduction and Purpose and Need, the decision criteria to be used for approval or disapproval of a proposed plan amendment require that the following determinations be made by the BLM:

1. A proposed plan amendment is in accordance with applicable laws and regulations; and
2. A proposed plan amendment will provide for the immediate and future management, use, development, and protection of the public lands within the CDCA.

With regard to the first criteria, the TWP would be constructed, operated, and decommissioned in accordance with all applicable laws and regulations, and as discussed in this section, the TWP would be consistent with the CDCA Plan and other applicable planning documents.

With regard to the second criteria; the proposed plan amendment would allow a wind energy project to be developed at the Project site. After the TWP is constructed, other land uses such as grazing may continue during Project operations. The TWP would be decommissioned after the planned the operational life of 30 years and the Project site would be rehabilitated and restored allowing for future management, use, development, and protection of the land.

Decision Criteria for Evaluation of Application

The TWP is consistent with the decision criteria to be used to evaluate future applications (see Chapter 1, Introduction and Purpose and Need). The TWP contains an onsite electrical collection system and would transmit the generated energy to a substation on the MWEP, which lies immediately adjacent to the Project site on private land. No BLM planning corridors are involved in the TWP. The Project has been sited to avoid sensitive resources (see Chapter 4,

Environmental Consequences). As discussed in 4.6.7 below, the TWP would conform to all applicable local plans. Wilderness values have been considered in this DEIS/PA and the TWP would be consistent with final wilderness recommendations (see sections 3.15 and 4.15, Special Designations). Ongoing projects that may be affected by the project have been identified and analyzed in Chapter 4, Environmental Consequences.

4.6.7 Consistency with Other Plans, Policies and Regulations

The following provides consistency determinations for land use plans, policies, and regulations that are applicable to the TWP:

Federal Land Policy and Management Act (FLPMA) of 1976: FLPMA provides the authority to issue a ROW grant to construct, operate, maintain, and decommission a wind energy project, including but not limited to ancillary facilities such as substation; administration, operations and maintenance facilities; transmission lines; and temporary construction lay down areas on BLM-administered public land. Issuance of a ROW grant for the TWP would be consistent with FLMPA.

Federal Aviation Administration (FAA): Federal Aviation Regulations (FAR) Title 14, Part 77, establishes the standards for determining obstructions in navigable airspace, including height limitations on structures taller than 200 feet or within 20,000 feet (3.8 miles) of an airport. The Proposed Action would be consistent with this regulation upon receipt of FAA Form 7460-1, Notice of Proposed Construction or Alteration, and Form 117–1, Notice of Progress of Construction or Alteration. A determination of no hazard is anticipated for the Proposed Action based on the height of the tallest structure, distance to nearest airport(s), and the elevation of the site and the airport.

Kern County General Plan: Land use and planning decisions on lands adjacent to the TWP site are regulated by the Kern County General Plan (KCGP). The recently-approved MWEP and PWEP, which will provide ancillary facilities to support the TWP, are consistent with applicable KCGP requirements.

Kern County Airport Land Use Compatibility Plan (ALUCP): The County's Airport Land Use Compatibility Plan (ALUCP) establishes procedures and criteria by which the County can address compatibility issues when making planning decisions regarding airports and the land uses surrounding them. The Kern County ALUCP requires compliance with FAR Title 14, Part 77 and notification of development of facilities which might cause significant impacts to the military mission of Edwards Air Force Base and China Lake Naval Air Weapons Station.

The Proposed Action would be consistent with the Kern County ALUCP upon receipt of FAA Form 7460-1, Notice of Proposed Construction or Alteration, and Form 117–1, Notice of Progress of Construction or Alteration. A determination of no hazard is anticipated for the Proposed Action based on the height of the tallest structure, distance to nearest airport(s), and the elevation of the site and the airport.

Kern County Zoning Ordinance: As defined by Section 19.08.160 and Figure 19.08.160 of the Kern County Zoning Ordinance (2011), the maximum allowable structure height in the project area is 500 feet. The project site is located in the "yellow" military review zone (Figure 3.11-1) which requires review of all structures over 500 feet in height. The height of the WTGs would not exceed 500 feet, as measured from the top of the foundation to the blade tip (with the blade in the vertical position). The ancillary facilities, the MWEP and PWEP, located on adjacent private lands, would be in compliance with the maximum allowable height regulations set forth in Section 19.08.160 Kern County Zoning Ordinance.

4.7 Livestock Grazing

This analysis focuses on whether the proposed TWP would conflict with the management goals and activities on BLM-designated grazing allotments.

4.7.1 Discussion of Direct and Indirect Impacts

Alternative 1 - Proposed Action (40 WTGs)

The Allotment Management Status Categories set by the BLM for the Antelope Valley allotment identify no known resource conflicts involving use or resource conditions. Although the allotment has not been grazed since 2008, due to lack of forage production, the allotment is currently permitted to a lessee for grazing. On October 21, 2011, BLM issued the permittee of the 960-acre grazing allotment an official two-year notification that the permitted land is being considered for another purpose that could result in a partial or complete reduction of the permitted use (BLM, 2011c). Thus, BLM has initiated a two-year notification process of potential permit cancellation pursuant to BLM grazing regulations 43 CFR 4110.4-2(b)(2005). It is expected that the land could be used for grazing following construction of the TWP. Through the process of this DEIS/PA, and proper coordination with the BLM, the Proposed Action would comply with the development standards and requirements identified by the BLM for rangeland management areas.

According to the BLM Standards for Rangeland Health for Livestock Grazing Management, there are instances where specific terms and conditions will be applied to grazing use authorizations for reasons other than those directly related to rangeland health, such as to accommodate other resource needs and land uses or to meet administrative requirements. Management changes will be considered and evaluated by the BLM through a site specific NEPA process prior to making final determinations (BLM, 1999).

If reductions in permitted grazing are necessary, the animal unit months (AUM; the amount of forage needed to sustain one cow, five sheep, or five goats for one month) by which the permitted use is reduced will be held in suspension until the authorized officer determines that rangeland health has recovered and all or part of the suspended permitted use can be restored. In the event of a suspension of this manner, per the BLM grazing regulations 43 CFR 4110.4-2(b)(2005), the BLM is required to give the rangeland lessee two years notice if there may be a change in the allotment grazing status as a result of energy projects (G. Harris, personal communication, December 5, 2011). Based on correspondence with the BLM Ridgecrest Field Office, a two-year notification for removal of the portion of the allotment associated with the Proposed Action has not been issued to date (S. Fenton, personal communication, April 2, 2013).

Construction

Construction activities within the boundaries of the Antelope Valley allotment would include the installation of up to 40 wind turbine generators (WTGs) and access roads throughout the TWP site. This level of construction would preclude the use of these portions of the Antelope Valley

allotment for livestock grazing for the duration of construction. Grazing would not be precluded on the entirety of the Antelope Valley rangeland allotment, but only on the parcels associated with the site of the Proposed Action. Furthermore, grazing would only be precluded on these parcels if construction were to take place when forage production was adequate to permit grazing of the allotment. In years of adequate ephemeral forage production the Antelope Valley rangeland allotment is typically available for grazing during the spring months, when vegetation growth tends to peak. Therefore, if construction were scheduled around the peak ephemeral forage production, or conducted in a year when production was inadequate to facilitate grazing, there would be no direct impacts upon grazing within the Antelope Valley allotment during construction of the Proposed Action (G. Harris, personal communication, 5 December 2011). A total of approximately 195 acres of foraging acreage would be affected during construction of the Proposed Action. This acreage would be returned to a state conducive to livestock grazing prior to the completion of construction, and is in addition to the impact acreage associated with the operation and maintenance of the Proposed Action, as discussed below.

Operation and Maintenance

During operation and maintenance the Proposed Action would not preclude livestock grazing on the site, or the Antelope Valley allotment as a whole. Direct disturbance related to the operation and maintenance of the TWP is estimated at approximately 24 acres, with roughly 22 acres of this associated with access roads, and two acres collectively associated with the 40 WTGs. The direct impacts to approximately 24 acres of rangeland associated with the Proposed Action would be relatively insignificant as the Antelope Valley allotment contains 7,871 acres; and has not been grazed since 2008 (S. Fenton, personal communication, 2 April 2013).

Decommissioning

Decommissioning of the Proposed Action would preclude livestock grazing only on the parcels of the Antelope Valley rangeland allotment associated with the Proposed Action. Grazing would not be precluded on the entirety of the Antelope Valley rangeland allotment, but only on the three parcels associated with the site of the Proposed Action. Furthermore, grazing would only be precluded on these parcels if decommissioning were to take place during a time when ephemeral forage production was adequate to facilitate grazing of the allotment. In years of adequate ephemeral forage production the Antelope Valley rangeland allotment is typically available for grazing during the spring months, when vegetation growth tends to peak. Therefore, if decommissioning were scheduled around the peak ephemeral forage production, or conducted in a year when production was inadequate to facilitate grazing, there would be no direct impacts upon grazing within the Antelope Valley rangeland allotment during decommissioning of the Proposed Action. Additionally, during the decommissioning process, all areas previously directly impacted (e.g. access roads, and WTG infrastructure) would be returned to a state conducive to livestock grazing.

Alternative 2 - Modified Proposed Action (37 WTGs)

This alternative is conceptually similar to the Proposed Action, but with the southwest 94-acre parcel eliminated, which would result in three fewer WTGs. The electrical collection system, access roads and SCADA system associated with the eliminated WTGs would not be constructed in Alternative 2.

Construction

During construction of this alternative, potential impacts to livestock grazing would potentially be less than described for the Proposed Action. If construction were to occur during the spring months, in a year when ephemeral forage production was considered adequate to facilitate grazing, the impacts to grazing under Alternative 2 would be slightly less than under the Proposed Action, as 94 additional acres would be available for grazing under Alternative 2. However, if construction were scheduled around the peak ephemeral forage production, or conducted in a year when production was inadequate to facilitate grazing, there would be no impact to grazing during construction under both the Proposed Action and Alternative 2.

Operation and Maintenance

During operation and maintenance of this alternative, potential impacts to livestock grazing would potentially be slightly decreased relative to the Proposed Action, as the permanent disturbances associated with Alternative 2 are estimated to be 23 acres, with roughly 21 acres of this associated with access roads, and two acres collectively associated with the 37 WTGs. Alternative 2 would provide an additional (1) acre that would be available for grazing, should ephemeral forage production be adequate to facilitate grazing within the allotment.

Decommissioning

During decommissioning of this action, potential impacts to livestock grazing would potentially be less than described for the Proposed Action. If decommissioning were to occur during the spring months, in a year when ephemeral forage production was considered adequate to facilitate grazing, the impacts to grazing under Alternative 2 would be slightly less than those described above for the Proposed Action, as 94 addition acres would be available for grazing under Alternative 2 compared to Alternative 1. However, if decommissioning were scheduled around the peak ephemeral forage production, or conducted in a year when production was inadequate to facilitate grazing, there would be no impact to grazing during decommissioning under both the Proposed Action and Alternative 2.

Alternative 3 - No Action Alternative

Under this alternative, the BLM would not approve the proposed TWP and would not amend the CDCA Plan. As a result, no wind energy project would be constructed, and the BLM would continue to manage the Antelope Valley allotment consistent with existing designations. Because there would be no amendment to the CDCA Plan and no wind project approved for the site under

this alternative, no new structures or facilities would be constructed or operated on the site and no new ground disturbance would occur; therefore, livestock grazing would not be affected.

Alternative 4 - No Project; Unsuitable

Under this alternative, the BLM would not approve the proposed TWP, but would amend the CDCA Plan to exclude the proposed site from future wind energy development. As a result, no wind energy project would be constructed on the site, and the BLM would continue to manage the site consistent with existing designations. Because the CDCA Plan would be amended to exclude future wind energy development, 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.

Alternative 5 - No Project; Suitable

Under this alternative, the BLM would not approve the proposed TWP, but would amend the CDCA Plan to include the proposed site in future wind energy development considerations. As a result, wind energy projects would have the potential to be constructed on the site in the future; however, the BLM would continue to manage the site consistent with the existing designations in the event that future development of wind energy projects did not occur on the site. Because the CDCA Plan would be amended to make future wind energy development possible, there is the potential that the site could be altered from its existing condition in the future in a way that would impact grazing.

4.7.2 Cumulative Impacts

Geographic Extent/Context

The geographic scope analyzed for cumulative impacts is considered the Antelope Valley allotment, which includes the site of the Proposed Action. The temporal scale analyzed for cumulative impacts is considered the duration of the TWP, from construction through decommissioning, as well as all reasonably foreseeable actions. The Antelope Valley allotment is relatively isolated from other ephemeral sheep allotments within the region. The Double Mountain allotment is the only allotment within 10 miles of the Proposed Action site. Both the Bissell and Warren allotments are located within 20 miles of the Proposed Action site, and the Boron and Cantil allotments are within 30 miles of the Proposed Action site (BLM, 2011).

Existing Cumulative Conditions: No existing developments within the Antelope Valley allotment are known at this time. Developments exist adjacent to, or in the immediate vicinity of, several parcels within the Antelope Valley allotment. Potential indirect effects on the allotment, from these adjacent developments may include access issues, and increased noise and dust emissions.

Reasonably Foreseeable Projects

Within the Antelope Valley allotment, several types of development projects could contribute to the cumulative impact of the TWP and alternatives, particularly renewable energy projects, which

can affect large areas of rangelands. These types of reasonably foreseeable projects could combine with potential impacts of the Proposed Action or an alternative to impact livestock grazing within the Antelope Valley allotment. At the time of analysis no reasonably foreseeable projects that may impact livestock grazing within the Antelope Valley allotment are known, other than the Proposed Action.

Construction, Operation and Maintenance, Decommissioning

Since the majority of the existing and proposed renewable energy developments included in the cumulative projects list are not located on BLM lands, the construction, operation and maintenance, and decommissioning of these projects would not result in the direct conversion of grazing acreage within the Antelope Valley allotment. However, due to the proximity of the cumulative projects to rangelands, indirect impacts to grazing may occur that are similar to those which exist under current cumulative conditions, as discussed above.

4.7.3 Mitigation Measures

As impacts to livestock grazing associated with the Proposed Action are considered minimal, no mitigation measures are recommended. As a means of further minimizing potential impacts to livestock grazing, the following consideration is recommended:

- Construction and decommissioning activities should be scheduled around the ephemeral growth season (typically spring months) to the furthest extent possible to minimize the potential for these activities to impact livestock grazing, should vegetative growth during this period be sufficient to permit livestock grazing.

4.7.4 Residual Impacts After Mitigation

Implementation of the TWP would not preclude grazing from the Antelope Valley allotment parcels associated with the Proposed Action, with the exception of the acreage directly impacted by the TWP. Grazing may also be precluded during construction and decommissioning activities, should they occur during springtime of a year with adequate ephemeral forage production. Implementation of the TWP would allow the allotment to maintain its rangeland designation.

4.8 Mineral Resources

4.8.1 Methodology for Analysis

This section addresses potential impacts to mineral resources associated with the Proposed Action and alternatives. A discussion of cumulative impacts for mineral resources is also included in this section. Baseline conditions for the environmental setting relevant to mineral resources are presented in Section 3.8 of this DEIS/PA. Construction, operation, maintenance, and decommissioning of the Proposed Action and alternatives were evaluated based on their potential to affect the baseline conditions.

4.8.2 Discussion of Direct and Indirect Impacts

Alternative 1 - Proposed Action (40 WTGs)

As described in Section 3.8, no oil, gas, or geothermal fields are directly located within the TWP site. However, the Mineral Resources Data System (MRDS) indicates that there are closed, current, and potential mineral resources and operations in the TWP site vicinity.

Construction

Appropriate sources of sand and gravel required for construction of the Proposed Action would be identified by a construction contractor and permitted through the BLM. Sand and gravel resources are common in the TWP area, and construction 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. As there are currently no known mineral resources located in the TWP site, development of the Proposed Action would not interfere with any active mining operations, and would not constitute a substantial impact on regionally or locally important mineral resources. In connection with the TWP ROW grant application, BLM will segregate approximately 1,207 acres of public lands, subject to valid existing rights, from appropriation under public land law including the Mining Law of 1872, as amended, for a period of two years beginning July 15, 2011 (excluding the Material Sales Acts). The BLM determined the segregation necessary to ensure the orderly administration of the public lands while it processes Heartland Winds' ROW application.

Operation and Maintenance

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 the Proposed Action 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. As such, during the lifetime of the Project, gravel resources may be extracted within the TWP site and transported to the necessary on-site locations; gravel during operations may also be extracted from off-site locations and transported to the TWP site as needed. The quantity of aggregate needed for operation and maintenance of the TWP would be far less than that needed for construction, and would not place pressure on the supply of these minerals. Sand and gravel

resources are present in the Project area, and operation and maintenance of the TWP 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. Additionally, as described under the discussion of construction-related impacts to mineral resources, development of the Proposed Action would not interfere with any active mining operations, and would not constitute a substantial impact on regionally or locally important mineral resources. Operation and maintenance of the Proposed Action would not permanently preclude the availability for exploration, extraction, and transport of any mineral resources.

Decommissioning

Decommissioning of the Proposed Action would not require a source of mineral resources such as sand and gravel, and 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.

Alternative 2 - Modified Proposed Action (37 WTGs)

Alternative 2 would involve the same components as the Proposed Action, except with the elimination of the southwest 94-acre parcel from the Project, which would result in 3 fewer WTGs and fewer acres of ground disturbance. Potential impacts to mineral resources under Alternative 2 would be similar to, but less than the Proposed Action because Alternative 2 would require proportionally less consumption of existing resources and/or restrictions on access to existing resources – e.g., it would use proportionately less sand and gravel.

Construction

Alternative 2 would not alter the sources or quantities of sand and gravel required for construction. As with the Proposed Action, construction of Alternative 2 would not interfere with any active mining operations or existing mining claims, nor would it 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.

Operation and Maintenance

Operation and maintenance activities under Alternative 2 would be the same as the Proposed Action. Operation and maintenance of Alternative 2 would not permanently preclude the availability for exploration, extraction, and transport of any mineral resources.

Decommissioning

Decommissioning of Alternative 2 would not require a source of mineral resources such as sand and gravel, and 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.

Alternative 3 - No Action Alternative

Under Alternative 3, no action would occur and existing conditions relevant to mineral resources would continue. No impacts associated with the TWP would occur.

Alternative 4 - No Project; Unsuitable

With Alternative 4, none of the TWP components would be built (No Project), and an amendment to the CDCA Plan would identify the Project site as unsuitable for wind energy development. Under Alternative 4, no action would occur and no future development of the site for wind energy would occur. Existing conditions relevant to mineral resources would continue and no impacts associated with the TWP would occur.

Alternative 5 - No Project; Suitable

With Alternative 5, none of the TWP components would be built (No Project), and an amendment to the CDCA Plan would identify the Project site as suitable for wind energy development. While no impacts associated with the TWP would occur, in the future, if another wind development project is proposed for the TWP site, the impacts to mineral resources related to that action could be similar to those of the TWP.

4.8.3 Cumulative Impacts

Geographic Extent/Context

The geographic extent of the cumulative analysis for the proposed TWP is Kern County, including the BLM lands within the County. This is an appropriate geographic extent for the cumulative impacts analysis because:

1. The State Mining and Geology Board typically designates Mineral Resource Zones at the county level;

2. The Kern County General Plan (KCGP) analyzes mineral availability county-wide; and

The focus of this cumulative analysis is the construction period for the Proposed Action and alternatives, because potential impacts of the TWP to mineral resources is primarily due to construction-related activities.

Existing Cumulative Conditions

Past and ongoing development throughout the TWP area has resulted in alterations to the natural landscape, including loss of mineral resources and restricted access to mineral resources. Those projects which comprise existing cumulative conditions for mineral resources include active mineral developments, as well as projects which establish residential and urban development that have either removed mineral resources, or restricted access to mineral resources. These conditions would be limited to the areas within and adjacent to the boundaries of individual projects. Because mineral resources are evaluated for their regional importance, cumulative impacts to mineral resources must be considered within the county as a whole, including the

BLM lands within the county. Table 4.1-1 identifies all projects within the cumulative scenario, while Table 3.8-1 (Mineral Resources in the Regional Vicinity of the TWP) describes all known past and current mineral developments in the area. This table represents the existing cumulative conditions relevant to mineral resources.

Reasonably Foreseeable Projects

Table 4.1-1 provides a listing of current and 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 Agency considers reasonably foreseeable. As mentioned above, the geographic extent of the cumulative scenario for mineral resources is Kern County, including the BLM lands within the county. Most of the Kern County projects listed in Table 4.1-1 and identified on Figure 4.1-1 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 4.1-1, their effects were considered in the cumulative impacts analyses in this DEIS.

Construction, Operation and Maintenance, Decommissioning

There are no active mineral resource operations within the proposed TWP site, and therefore the TWP or alternatives would not result in the loss of availability of a locally important mineral resource or a known regionally important mineral resource, and any potential impacts associated with restricted access would be temporary and of short duration, associated strictly with the transport of aggregate materials to and from the site. Sand and gravel resources are present in the vicinity of the TWP, and construction of the TWP or an alternative 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. Therefore, construction of the Proposed Action and alternatives would not result in an adverse cumulative impact to mineral resources.

Operation and maintenance of the Proposed Action and alternatives 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. As previously described, mining claims on public lands under BLM jurisdiction are subject to BLM authority; the presence of the TWP would not alter this jurisdiction or authority and would not remove access to any known mineral resource. As a result, the operation and maintenance of the TWP or an alternative would not result in an adverse cumulative impact to mineral resources.

Decommissioning of the Proposed Action and alternatives would not require a source of mineral resources such as sand and gravel, and 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, as described in preceding sections. Therefore, decommissioning of the TWP or an alternative would not result in an adverse cumulative impact to mineral resources.

4.8.4 Mitigation Measures

No mitigation measures are proposed.

4.8.5 Residual Impacts After Mitigation

The construction, operation and maintenance, and decommissioning of the Proposed Action or an alternative would not result in any unavoidable adverse impacts to mineral resoruces.

4.9 Noise

4.9.1 Methodology for Analysis

Noise and vibration impacts associated with the TWP can be created by short-term construction activities and by normal long-term operation of the wind energy facility. This impact assessment is based on calculations included in Appendix E, the *Noise Technical Report Tylerhorse Wind Energy Project* (CH2MHill, 2012).

4.9.2 Discussion of Direct and Indirect Impacts

Alternative 1 - Proposed Action (40 WTGs)

Effects on existing ambient noise and vibration levels may arise from TWP 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 TWP site.

Construction

Construction of the TWP is expected to occur over a period of four months. Construction activity noise levels at and near the TWP site would fluctuate depending on the particular type, number, duration of use of various pieces of construction equipment, distance between the noise source and sensitive receptor, and presence or absence of noise attenuation barriers. Construction activities typically require a variety of noise-generating equipment. The BLM Wind Programmatic EIS reports noise levels for typical construction equipment that would likely be used at a wind turbine project (BLM, 2005). The BLM construction noise levels are presented in Table 4.9-1 below.

As noted in Section 3.9 of this DEIS/PA and specifically identified in Appendix E, the maximum turbine layout indicates turbines may be within approximately 1,200 feet of potentially habitable residential structures. In the event such distances were realized in the final design, the expected construction noise level for turbine related activities would generally range between 52 and 62 dBA. Although such levels are expected to be noticeable, they will be limited in duration as construction progresses from one portion of the Project to another. Additionally construction noise levels would be below the general 65 dBA limit for outdoor noise specified in the Kern County General Plan Noise Element.

TABLE 4.9-1
NOISE LEVELS AT VARIOUS DISTANCES FROM TYPICAL CONSTRUCTION EQUIPMENT

Construction Equipment	Noise Level L_{eq} at Distanced [dB(A)]					
	50 Ft	250 ft	500 ft	1,000 ft	2,500 ft	5,000 ft
Bulldozer	85	71	65	59	51	45
Concrete mixer	85	71	65	59	51	45
Concrete pump	82	68	62	56	48	42
Crane, derrick	88	74	68	62	54	48
Crane, mobile	83	69	63	57	49	43
Front-end loader	85	71	65	59	51	45
Generator	81	67	61	55	47	41
Grader	85	71	65	59	51	45
Shovel	82	72	62	56	48	42
Truck	88	74	68	62	54	48

dBA = decibels (A-weighted)

SOURCE: BLM, 2005

The BLM Wind Programmatic EIS also summarizes potential noise levels that would occur from heavy truck traffic, as shown in Table 4.9-2 (BLM, 2005).

TABLE 4.9-2
NOISE LEVELS AT VARIOUS DISTANCES FROM HEAVY TRUCKS

Hourly Vehicle Traffic	Noise Level L_{eq} at Distanced [dB(A)]					
	50 Ft	250 ft	500 ft	1,000 ft	2,500 ft	5,000 ft
1	51	44	41	38	34	31
10	61	54	51	48	44	41
50	68	61	58	55	51	48
100	71	64	61	58	54	51

dBA = decibels (A-weighted)

SOURCE: BLM, 2005

Ground Vibrations from Construction Activities

Vibration associated with noise, which takes the form of oscillatory motion, can be described in terms of acceleration, velocity, and displacement. There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings. The root mean square (RMS) velocity levels (L_v) is most frequently used to describe the affect of vibration on the human body.

The Federal Transit Administration (FTA) potential building damage threshold of 0.2 inch/second and human annoyance response of 80 RMS (FTA, 2006) was used to compare TWP construction that may require drilled piles. Based on the information presented in Table 4.9-3, vibration could reach as high as approximately 0.089 in/sec PPV at 25 feet from the source activity, depending on the type of construction equipment in use. This corresponds to an RMS velocity level of 87 VdB. Attenuated to 1,200 feet, vibration levels at the nearest potentially habitable residential structure would not exceed the potential building damage or human annoyance thresholds. Other sensitive receptors in the TWP vicinity would be exposed to vibration levels at incrementally lower levels.

TABLE 4.9-3
VIBRATION SOURCE LEVELS FOR CONSTRUCTION EQUIPMENT

	Approximate PPV (in/sec)					Approximate L_v (VdB)				
Equipment	**25 Feet**	**50 Feet**	**60 Feet**	**75 Feet**	**100 Feet**	**25 Feet**	**50 Feet**	**60 Feet**	**75 Feet**	**100 Feet**
Large Bulldozer	0.089	0.031	0.024	0.017	0.011	87	78	76	73	69
Caisson Drilling	0.089	0.031	0.024	0.017	0.011	87	78	76	73	69
Loaded Trucks	0.076	0.027	0.020	0.015	0.010	86	77	75	72	68
Jackhammer	0.035	0.012	0.009	0.007	0.004	79	70	68	65	61
Small Bulldozer	0.003	0.001	0.0008	0.0006	0.0004	58	49	47	44	40

SOURCE: FTA, 2006; ESA, 2013.

Operational Noise

As described in Appendix E, a noise model of the Project was developed using a sound power level (PWL) of 112 dBA, representative of the loudest turbine considered for this Project. The representative data were used as typical source input in the noise model, and noise emissions from the Project were calculated at nearby noise-sensitive receptors of potential concern. The noise levels represent the anticipated maximum steady-state level from the Project operating at rated capacity.

Standard acoustical engineering methods were used in the noise analysis. The sound propagation factors used in the model have been adopted from ISO 9613-2, *Acoustics— Attenuation of Sound during Propagation Outdoors—Part 2: General Method of Calculation* (ISO, 1996). The sound power levels representing the standard performance of the wind turbine generators were assigned based on data supplied by the manufacturer. Using these sound power levels as a basis, the model calculates the sound pressure level that would occur after losses from distance, air absorption, ground effects, and screening are considered. The ISO 9613-2 model is based on an omni-directional downwind condition. That is, the noise prediction algorithms assume every point at which sound level is calculated is downwind of all turbines simultaneously. While this is physically impossible, the ISO 9613-2 model has been widely and successfully used to develop acoustical models for wind energy and other facilities. When receivers are located in an actual

upwind or crosswind condition, lower sound levels may be expected. This analysis focuses on the more conservative downwind condition, consistent with ISO 9613-2.

Potential residential structures were identified by Sapphos Environmental, Inc. and correspondence with the Kern County Tax Assessor's office and are described in Appendix E (beginning on page A-1 and summarized in Table A-1). The highest predicted Project noise level from the maximum turbine layout at a potential residential structure is predicted to be 52 dBA Leq. Notably, the noise level predictions included in Appendix E are based on all wind turbine generators operating at their maximum PWL of 112 dBA simultaneously. Potential noise levels at two residences are predicted to be greater than the Kern County Wind Energy Combining District exterior limit of 45 dBA, but none are anticipated to exceed the County's General Plan Ldn limit of 65 dBA (or 55 dBA during the night).

Maintenance and Decommissioning

Regular maintenance activities would include periodic site visits to wind turbines, communication cables, transmission lines, substations, and auxiliary structures. These activities would involve light- or medium-duty vehicle traffic (typically licensed for use on public roads) with relatively low noise levels. A doubling of traffic volumes on a roadway is required for a 3 dBA increase in noise, which is the human threshold for perceiving a change in the ambient noise level (FTA, 2006). Operational vehicle trip increases would be minimal and would not result in the doubling of traffic volumes on local roadways, and therefore would not generate a substantial increase in noise along local roadways. Infrequent but potential noise-generating activities could also include road maintenance work with heavy equipment, as well as repairing wind turbines, or auxiliary equipment. The anticipated levels of noise and vibration from maintenance activities would be less than those associated with construction activities.

In general, noise and vibration impacts from decommissioning activities would be similar to those associated with construction activities. However, it is anticipated that decommissioning activities would be of shorter duration.

Alternative 2 - Modified Proposed Action (37 WTGs)

Alternative 2 would be similar to the Proposed Action; however under this alternative, the overall size of the project would be reduced by 94 acres and fewer wind turbine generators would be constructed. Because Alternative 2 would require the same amount of construction workforce and operational personnel as the Proposed Action, this alternative would generate either a similar amount of construction and operational noise at the nearest sensitive receptors, and impacts would be similar to the Proposed Action.

Alternative 3 - No Action Alternative

If Alternative 3 is implemented, no changes to the site would occur, as the BLM would not approve the proposed TWP and would not amend the CDCA Plan. As such, no wind energy

project would be constructed, and the existing environmental setting would be maintained. As no development would occur under this condition, Alternative 3 would result in no changes to existing noise levels.

Alternative 4 - No Project; Unsuitable

If Alternative 4 is implemented, the BLM would not approve the proposed TWP and would amend the CDCA Plan to preclude the development of another wind project on the site. As such, no wind energy project would be constructed at the site, and the existing environmental setting would be maintained. As no development at the site would occur under this condition, Alternative 4 would result in no changes to existing noise levels.

Alternative 5 - No Project; Suitable

If Alternative 5 is implemented, the BLM would not approve the proposed TWP and would amend the CDCA Plan to permit the development of another wind project on the site in the future. As such, if the BLM were to approve another wind energy project in the future, it is assumed that impacts could be similar to the Proposed Action.

4.9.3 Cumulative Impacts

Geographic Extent/Context

Although noise levels are additive, the noise level at any particular location is dominated by the loudest (typically the closest) source. More distant sources have a diminishing effect on receptor levels. In the event two noise sources are equal in level, the combined sum results in a 3-dBA increase, which is generally considered the threshold of a perceptible increase when comparing similar sound sources. It is therefore unlikely that a cumulative impact would substantially exceed a direct impact. The geographic extent for the analysis of cumulative impacts related to noise is generally limited to areas within approximately one mile of the Project site because noise impacts would generally be localized. At distances greater than one mile, impulse noise may be briefly audible and steady construction and/or operational noise would generally dissipate such that the level of noise would blend in with background noise levels.

Ground vibration impacts of the TWP stem primarily from temporary on-site construction activities. Ground vibrations dissipate more rapidly than airborne noise levels, limiting the geographic extent of ground vibration to the immediate vicinity of the vibration source.

Reasonably Foreseeable Projects

Table 4.1-1 provides a list of current and 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 reasonably foreseeable. The two primary projects included in the cumulative noise analysis were the Manzana Project (Operational Date, October 2012) and the Pacific Wind Energy Project (Operational Date, August 2012).

Construction, Operation and Decommissioning

The evaluation of the potential for cumulative impacts to ambient noise levels at sensitive receptors, potential residences, took into consideration the combined effects of the operation of the Project with the Manzana Project (Operational Date, October 2012) and the Pacific Wind Energy Project (Operational Date, August 2012). As a result of that analysis, it was determined that the combined effects of the Project and the existing operations of the Manzana Project and Pacific Wind Energy Project would not increase the noise level at a residence by more than 3 dBA above the level predicted for either the Project or the simultaneous operation of the existing projects. A 3-dBA increase is the threshold of perceptible level of change; therefore, the Project would not be expected to result in cumulatively considerable significant adverse impacts to ambient noise levels at sensitive noise receptors located within one mile of the Project.

4.9.4 Mitigation Measures

The Applicant proposes to implement the following measures to ensure that any potential noise impacts of the facility are minimized during construction and operations.

Construction Noise Mitigation Measures

Noise-1*: Construction Hours.* Noisy construction activities will be prohibited within 1,000 feet of residences between 9:00 p.m. and 6:00 a.m. on weekdays and between 9:00 p.m. and 8:00 a.m. on weekends. In the event night construction near residences is required, the Project will notify residents and develop a construction noise mitigation plan that details mitigation measures such as temporary noise walls and enhanced exhaust silencers.

Noise-2*: Vehicle and Equipment Operation.* Haul trucks and other engine-powered equipment shall be provided with adequate mufflers. Haul trucks shall be operated in accordance with posted speed limits. Use of truck engine exhaust brakes shall be limited to emergencies.

Noise-3*: Maintenance of Construction Equipment.* Construction contractors shall be required to ensure that construction equipment is well tuned and maintained according to the manufacturer's specifications, and that the standard noise reduction devices on the equipment are in good working order. If stationary construction equipment (i.e., compressors and generators) is anticipated, the equipment shall be required to be located as far as practicable from nearby residences.

Noise-4*: Resident Notification.* The Applicant shall notify residences within 1 mile of any unusually loud construction activities, at least 1 week prior to their scheduled occurrence.

Operational Noise Mitigation Measures

Noise-5*: Project Design and Turbine Selection Process.* The Applicant will prepare an acoustical analysis as part of the Project based on the final layout with the selected turbine to document that a Project sound level of 45 dBA is not expected to be routinely exceeded at occupied residences that have not entered into agreements with the owner. If warranted by the acoustical analysis, the Project Applicant shall **implement** the following measures to reduce or minimize the potential effects of sound emissions from the Project:

- Reduce potential Project noise levels through selection of final turbines (using a quieter turbine), changing the locations of wind turbine generators, or modifying the operations of the wind turbines.
- Obtain easements or agreements from neighboring property owners.
- Establish a Noise Complaint Resolution Process.

Noise-6*: Noise Complaint Resolution Process.* The Project Applicant shall document, investigate, evaluate, and attempt to resolve legitimate project-related noise complaints. The Project Applicant or authorized agent shall document the complainants name and address, date, time, and nature of the noise complaint. The Applicant shall document actions taken to evaluate and resolve the complaint.

4.9.5 Residual Impacts After Mitigation

While noise impacts would remain, implementation of mitigation measures would ensure that the Project would be in compliance with the County Code Section 19.64.140.J WE Combining District noise limits, as well as the County General Plan Noise Element policies, regarding outdoor and interior noise levels.

4.10 Paleontological Resources

4.10.1 Methodology for Analysis

This analysis of potential effects of the TWP and its alternatives to paleontological resources is based on a review of relevant literature, and site-specific information provided by the Applicant. A paleontological literature and records search was conducted at the Natural History Museum of Los Angeles County and the Buena Vista Museum of Paleontology; and a fossil locality search was conducted through the University of California Museum of Paleontology Web site database. Site-specific information generated by the Applicant includes *Environmental Assessment for the Tylerhorse Wind Energy Project* prepared by Sapphos in 2011 (Sapphos, 2011).

All research on the paleontological resource context of the Project site was conducted in accordance with the Potential Fossil Yield Classification (PFYC) assessment protocol used by the BLM to assess the potential for known paleontological resources to exist in the general area and how fossils, if present, might be impacted by the Proposed Action and Alternatives. The study area for the analysis of potential effects of the Proposed Action and alternatives on paleontological resources includes the zone of expected surface disturbance and the stratigraphic context in which fossils are located.

Surface disturbing actions have the potential to cause adverse effects on surface and subsurface paleontological resources in rock units and overlying sediments known to contain them. Direct impacts include destruction due to breakage and fragmentation. Indirect impacts may result from increased accessibility to paleontological resources resulting in an increased likelihood of looting or vandalism. Cumulative impacts are incremental effects and constitute the long-term loss of scientific information that might otherwise have been gained through preservation, recovery, and/or salvage of fossil resources.

4.10.2 Discussion of Direct and Indirect Impacts

Alternative 1 - Proposed Action (40 WTGs)

Construction

Construction of the TWP would include the following earth disturbing activities: 1) clearing and grading associated with new access roads, turbine pads, and underground electrical system pathways; 2) foundation excavation for wind turbine towers; and 3) underground trenching for the electrical collection system. These activities are expected to permanently disturb 25 acres, and soil moving associated with facility installations could potentially damage or destroy paleontological resources via breakage and crushing. Although a site field survey was not conducted, it can be assumed based on PFYC assessment protocol, the near surface occurrence of sensitive geologic units, and a museum records search, that the probability of encountering paleontological resources near to the ground surface would be moderate to high within: 1) the northern and western portion of the Project located in Section 24; 2) the central and western portion of the Project located in

Section 26; and 3) the entire Project site in Section 28.[1] Further, the potential for encountering fossils hosted in Holocene and Late Pleistocene alluvium would increase with the depth of soils disturbed, and excavations for wind turbine towers that penetrate surficial Holocene age alluvium would range in depth from 32 to 50 feet and would have a higher probability of encountering potentially high sensitivity materials. Much of the Project site is underlain by geologic deposits determined to have a moderate to high paleontological sensitivity, either at the surface or at a depth, that would be encountered during foundation excavations for wind turbine towers.

To address the potential for undiscovered fossils to be disturbed or destroyed during Project-related excavations, Mitigation Measures Paleo-1 through Paleo-3 would be implemented to reduce adverse effects on sensitive paleontological resources throughout the TWP site. These mitigation measures are described in Section 4.10.6 and would: 1) require a site specific paleontological field survey prior to the start of construction aimed at identifying potential surface fossils and exposure of potentially fossil bearing geologic units; 2) require a workers environmental training program to be established and administered by a qualified paleontologist prior to the start of construction; 3) ensure that the qualified paleontologist is present for all earth disturbance work in sensitive paleontological areas; and 4) ensure a paleontological monitoring report is completed by the qualified paleontologist at the end of construction that summarizes all Project construction related impact to paleontological resources. These mitigation measures would effectively identify potentially significant fossil resources in the field during construction, and would ensure that their significance is evaluated by qualified personnel, recorded, and recovered if appropriate. Implementation of the mitigation measures would result in the avoidance or substantial reduction of adverse impacts to paleontological resources. Should unique or significant fossil resources be salvaged during Project-related grading and construction, implementation of the mitigation measures would result in an improved scientific understanding of the natural history and geology of the area that would not have been gained otherwise.

One caveat of the aforementioned mitigation measures is that they may not be sufficient to totally avoid or eliminate potential adverse impacts on paleontological resources resulting from damage by excavation equipment or fossils that are missed by paleontological monitors during excavation. While the damage caused by construction equipment can typically be repaired in a laboratory, potential fossils missed by paleontological monitors would not be recovered. As such, mitigation measures may not be able to completely avoid these adverse impacts on paleontological resources resulting from human error.

However, given that 1) the mitigation measures include multiple measures to avoid damage to fossil resources, including active monitoring, and 2) the gain of scientific information through identification and recovery of paleontological resources is predicated on their discovery within a specific geologic host unit; construction of the Project could result in a net gain to the science of paleontology by allowing fossils that would not otherwise have been found to be identified, studied, and if appropriate, recovered and preserved. Therefore, the net effect of construction of the TWP on paleontological resources would be negligible.

[1] The TWP is located in Sections 24, 26, and 28 in Township 10 North, Range 15 West San Bernardino Meridian.

Operation and Maintenance

Operation and maintenance of the Project would not adversely impact paleontological resources because no earth disturbance would occur as a result of these activities.

Decommissioning

Future decommissioning and closure of the TWP would not adversely impact paleontological resources. The ground that may be disturbed during decommissioning would have already been disturbed during construction and thus subjected to the requirements set forth in mitigation measures.

Alternative 2 - Modified Proposed Action (37 WTGs)

Because Alternative 2 would eliminate the western-most parcel from the Project, the ground disturbance from Alternative 2 would be less than that associated with the Proposed Action, and potential impacts to paleontological resources would be correspondingly reduced in magnitude.

Alternative 3 - No Action Alternative

If this No Action Alternative were selected, the construction and operational impacts of the TWP would not occur. There would be no grading of the site, no excavation of wind turbine towers, no trenching for the underground electrical system and no potential impacts to paleontological resources.

Alternative 4 - No Project; Unsuitable

Under this alternative, the proposed TWP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site unavailable for future wind energy development. As a result, no wind energy project would be constructed on the site and the BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan.

Because the proposed TWP would not be approved, and the CDCA Plan would be amended to make the area unavailable for future wind energy development, 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. As a result, the geologic conditions of the site would not be expected to change noticeably from existing conditions and, as such, this alternative would not result in impacts to paleontological resources, nor would it result in the potential benefits of additional knowledge about local paleontological resources that could result from construction of the Proposed Action.

Alternative 5 - No Project; Suitable

Under this alternative, the proposed TWP would not be approved by the BLM, and BLM would amend the CDCA Plan to allow for other wind energy projects on the site. As a result, it is possible that another wind energy project could be constructed on the site.

Because the CDCA Plan would be amended to find the site suitable for wind energy development, it is possible that the site would be developed with the same or a different wind energy technology. As a result, impacts related to paleontology would result from the construction and operation of the wind energy technology and would likely be similar to the impacts from the Proposed Action. Different wind energy technologies require different amounts of grading, excavation and maintenance; however, it is expected that all the technologies would require some grading, excavation and maintenance. As such, Alternative 5 could result in the same affects to paleontological resources as the Proposed Action.

4.10.3 Cumulative Impacts

Geographic Extent/Context

All projects in the cumulative scenario that would be located on the same geologic units within Kern County, including Holocene alluvium, Pleistocene alluvium, and dry desert washes are considered within the geographic scope of analysis with respect to cumulative impacts on paleontological resources. This is because impacts related to the ground disturbance caused by individual projects in the cumulative scenario, if not properly mitigated, could combine to cause a cumulative loss of scientific information through disturbance or destruction of potentially significant fossil resources. Since these geologic units are ubiquitous across the interior drainage basins of the desert region, all projects listed in Table 4.1-1, Cumulative Projects List in Section 4, Introduction could cause impacts that may combine with those of the Proposed Action. Projects in the cumulative scenario could affect paleontological resources regardless of their timing.

Existing Cumulative Conditions

Cumulative conditions related to paleontological resources involve the loss of non-recoverable scientifically important fossils and associated data, and the incremental loss to science and society of these resources over time. Energy development projects, as well as commercial and residential development projects, have resulted in cumulative conditions affecting paleontological resources in Kern County. Past or present projects which contribute to existing cumulative conditions in the Project area, as relevant to paleontological resources, are limited to the MWEP to the north. This project is being constructed and may have caused impacts to paleontological resources that would be similar to impacts from the TWP; however, operation and maintenance of the MWEP does not require any earth disturbing activity relevant to paleontological resources and would not combine with impacts of the TWP to result in cumulative effects.

Reasonably Foreseeable Projects

Table 4.1-1 provides a list of current and 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 Agency considers reasonably foreseeable. 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 4.1-1, their effects were considered in the cumulative impacts analyses in this EIS. Table 4.1-2 identifies the cumulative projects that are located in the geographic area of analysis for cumulative impacts to paleontological resources.

Construction, Operation and Maintenance, Decommissioning

Any potential cumulative impacts to paleontological resources would be limited to the earth disturbing activities performed during the construction phase of the TWP, as no earth disturbance would occur during operation and maintenance and earth disturbed during decommissioning would have already been disturbed during construction. Excavation activities associated with the Project in conjunction with other projects in the area could contribute to the progressive loss of sensitive paleontological resources. However, with implementation of the mitigation measures described below, construction-related impacts from the TWP to paleontological resource are expected to be negligible and would not contribute substantially to cumulative impacts. Therefore, since other similar projects would be expected to require similar mitigation measures that minimize and or avoid impacts, it is unlikely that the negligible impacts of the Proposed Action would combine with these impacts to result in cumulative impacts on paleontological resources.

4.10.4 Mitigation Measures

In paleontological sensitive areas, the objective of paleontological mitigation is to reduce adverse effects on paleontological resources by recovering fossils and associated contextual data prior to and during ground disturbing activities. Paleontological mitigation results in a beneficial impact when scientifically important fossils and associated data are housed in perpetuity and made available for educational purposes and scientific research in an accredited and federally approved museum.

The following mitigation measures have been developed to reduce the potential adverse impacts on paleontological resources.

Paleo-1: To address potential paleontological impacts during the pre-construction phase:

a) Prior to the start of any Project-related construction (defined as construction-related vegetation clearing, ground disturbance and preparation, and site excavation activities), the Project owner shall ensure that a qualified paleontologist is available for field activities and is prepared to implement the conditions of approval. The qualified paleontologist shall be responsible for implementing all the paleontological conditions of approval and for using qualified personnel to assist in this work. Further, the qualified paleontologist shall conduct a field survey to inspect the Project site for surface fossils prior to the commencement of construction, so that existing fossils, if present are recorded and recovered, if appropriate. The paleontologist shall also field-verify exposures of potentially fossil bearing geologic units in order to confirm areas targeted for excavation that may contain fossil-bearing geologic units.

b) Prior to the start of construction, the qualified paleontologist shall prepare a worker's environmental awareness training program. The paleontological training program shall address the potential to encounter paleontological resources in the field, the sensitivity and importance of these resources, and the legal obligations to preserve and protect such resources. The training program shall also include the set of reporting procedures that workers are to follow if paleontological resources are encountered during Project activities. The training program shall be presented by a qualified paleontologist and may be combined with other training programs prepared for cultural and biological resources, hazardous materials, or any other areas of interest or concern.

Paleo-2: To address potential paleontological impacts during the construction phase:

a) The qualified paleontologist or paleontological monitor shall be present at all times he or she deems appropriate to monitor construction-related grading, excavation, and trenching in areas with a significant potential for fossil-bearing sediments to occur. All ground-disturbing activities in areas determined to have a moderate to high sensitivity shall be monitored on a full-time basis at the start of the Project. All ground disturbances in areas determined to have low to high sensitivity shall also require monitoring on a full-time basis during the 32-50 foot deep foundation excavation for wind turbine towers, initially. If no significant fossils are found, then the frequency of monitoring shall be adjusted at the discretion of the qualified paleontologist after an adequate amount of time is spent observing the geologic deposits in the Project site.

b) Paleontological monitoring will include inspection of exposed rock units and collection of matrix to be tested for the presence of microscopic fossils. Paleontological monitors will have authority to temporarily divert excavations or drilling away from exposed fossils in order to efficiently and professionally recover the fossil specimens and collect associated data. Any paleontological fieldwork occurring on lands administered by the BLM would require a Paleontological Resources Use Permit issued by the BLM state office.

Paleo-3: To address potential paleontological impacts during the post- construction phase:

a) The Project owner shall ensure preparation of a Paleontological Resources Monitoring Report by the qualified paleontologist. The report shall be completed following the analysis of any recovered fossil materials and related information. The report shall include, but not be limited to, a description and inventory list of recovered fossil materials (if any); a map showing the location of paleontological resources found in the field; determinations of scientific significance; and a statement by the qualified paleontologist that Project impacts to paleontological resources have been mitigated.

4.10.5 Residual Impacts after Mitigation

The implementation of the included mitigation measures would substantially reduce potential adverse impacts on scientifically significant paleontological resources. However, even in the most effective paleontological mitigation monitoring program, inadvertent damage to paleontological resources can occur. This damage might occur in the course of soil moving by construction vehicles and equipment prior to identification by a site worker or paleontological monitor; and in other cases in which fossils present within soil stockpiles or excavation pits fail to be seen or identified. The possibility of irreparable damage to fossils that are not identified or recovered by paleontological monitors is speculative, but nevertheless represents a potentially unavoidable adverse impact.

4.11 Public Health and Safety

This section describes effects on public health and safety that could result from implementation of the TWP and alternatives. The following discussion addresses potential environmental impacts associated with implementation of the TWP and recommends measures to reduce or avoid adverse impacts anticipated from construction, operation, and decommissioning of the TWP and alternatives. A discussion of cumulative impacts related to public health and safety is also included in this section.

4.11.1 Methodology for Analysis

This analysis of potential public health and safety environmental impacts considered following issue areas: aircraft operations, hazardous materials, public health, and intentionally destructive acts.

Aircraft Operations

Research on public and private airports in the vicinity of the TWP site was conducted as well as research on Edwards Air Force Base (AFB), which is located approximately 20 miles east of the TWP site. A private airstrip, Rosamond Skypark, is located approximately 12 miles southeast of the Project site. Analysis of the Federal Aviation Administration (FAA) guidelines was conducted to determine whether the TWP and alternatives would adversely affect commercial, military, or personal air navigation safety.

Risk of Accidents and Spills

This analysis includes a review and assessment of the potential for the transportation, handling, and use of hazardous materials to impact the surrounding community. This analysis addresses the potential impacts on all members of the population, particularly the young, the elderly, and people with existing medical conditions that may make them more sensitive to the adverse effects of hazardous materials. To accomplish this goal, analysis used the most current public health exposure levels (both acute and chronic) that are established to protect the public from the effects of an accidental chemical release.

No hazardous materials would be stored on lands administered by the BLM during the operational phase of the Project. Any hazardous materials necessary for maintenance would be stored at the operation and maintenance facilities offsite at the MWEP and PWEP locations. Therefore, this analysis focuses more on the construction phase of the Proposed Action.

Engineering and administrative controls concerning hazardous materials uses are included as part of the Proposed Action. Engineering controls are the physical or mechanical systems, such as storage tanks or automatic shut-off valves, that can prevent the spill of hazardous material from occurring, or that can either limit the spill to a small amount or confine it to a small area. Administrative controls are the rules and procedures that workers must follow that would help to prevent or minimize accidents. Both engineering and administrative controls can act as methods

of prevention or as methods of response and minimization. In both cases, the goal is to prevent a spill from moving off-site and causing harm to the public.

Hazardous Materials

To assess the potential for released hazardous materials to affect the public, this analysis evaluates several aspects of the proposed use of these materials at the facility. The analysis examined the choice and amount of chemicals to be used, the manner in which the Applicant would use the chemicals, the manner by which they would be transported to the facility, and the way in which the Applicant plans to store the materials on site.

Public Health

Potential impacts from the TWP to public health for residents of Kern County include disease vectors, pesticide use, shadow flicker, and electromagnetic fields. Potential impacts will be discussed as they compare to changes in existing conditions. Several controls and programs are already in place within the County such as vector control activities.

Intentionally Destructive Acts

The potential for intentional destructive acts, such as sabotage or terrorism events, to cause impacts to human health and the environment are discussed. As opposed to industrial hazards, collisions, and natural events, where it is possible to estimate event probabilities based on historical statistical data and information, it is not possible to accurately estimate the probability of an act of terrorism or sabotage.

4.11.2 Discussion of Direct and Indirect Impacts

Alternative 1 - Proposed Action (40 WTGs)

Construction

Aircraft Operations

Safety hazards to aircraft operations could occur during construction of the Proposed Action. Large cranes used to erect WTGs and the completed portions of the TWP could pose a potential safety hazard to aircraft operations by presenting an obstruction for low-flying aircraft. The FAA requires a notice of proposed construction for a project so that it can determine whether it would adversely affect commercial, military, or personal air navigation safety. The Proposed Action would comply with the requirement through implementation of Mitigation Measure PH-1 (see Section 4.11.6) to minimize safety hazards during construction to commercial, military, or civilian air navigation. With the implementation of Mitigation Measure PH-1, the Proposed Action would not have an adverse impact on aircraft operations. The TWP site is approximately 20 miles west of Edwards AFB, and is within military based special use airspace and beneath a military designated low-level flight path. Once constructed, the WTGs would be below 500 feet in height and would create little to no impact to military flight paths. With implementation of Mitigation Measure PH-1, construction activities would occur with full coordination of commercial, military or civilian air navigation. Therefore, there would be no adverse impacts to aircraft operations or airspace navigation during construction activities.

Hazardous Materials

A limited amount of hazardous materials may be used during construction of the TWP. This may include cleaning fluids, fuels (gasoline, diesel fuel, etc.), lubricants, cleaning solvents, paints, pesticides, and potentially explosives; and would require appropriate storage, use, and disposal. Soiled rags and similar applicators and clean up materials would also require disposal. No refueling of vehicles or equipment would occur on the TWP site.

As discussed in Section 3.11, Public Health and Safety, the TWP site is not in any of the environmental databases and no properties of environmental concern were identified within one mile of the TWP site. However, the use, storage, and disposal of hazardous materials and waste associated with construction of the Proposed Action could result in potential adverse health and environmental impacts associated with improper management resulting in a release of these materials. Direct impacts of such releases could include contamination of vegetation, soil, and water, which could result in indirect impacts to human and wildlife populations. All hazardous materials would be handled and stored in compliance with applicable codes and regulations. The Applicant and its contractor would store all paint, solvents, and any other hazardous materials in the manner specified by the manufacturer and in accordance with local, State, and federal regulations.

Construction of the TWP would result in a potential hazard to the public or personnel if a hazardous material spill or leak were to occur. In accordance with the California Health and Safety Code, the Applicant would prepare a hazardous materials management plan that would delineate storage areas for hazardous material and hazardous waste; describe proper handling, storage, and disposal techniques; describe methods to be used to avoid spills and minimize impacts in the event of a spill; describe procedures for handling and disposing of unanticipated hazardous materials encountered during construction; and establish public and agency notification procedures for spills and other emergencies, including fires. Implementation of the hazardous materials construction BMP provided in the Hazardous Materials Management Plan (refer to Section 2.4.6) would ensure that materials are handled in a safe manner and would minimize the risk of accidental releases of hazardous materials at the TWP site. Implementation of the Hazardous Materials Management Plan as part of the Proposed Action would reduce, but not completely avoid, potential impacts to the public or personnel from a hazardous material spill or leak.

Although not observed during site reconnaissance, contamination from petroleum products (crude oil, gasoline, motor oil, and diesel) is one of the most common types of unknown contamination encountered and is generally detectable by visual and olfactory observation. Grading, drilling, or excavation at the TWP site has the potential to mobilize hazardous materials currently in the soil. This could result in exposure of personnel and other sensitive receptors such as plants and wildlife to contaminant levels that could result in short- and long-term health effects. Implementation of Mitigation Measure PH-2 would further reduce impacts by requiring the construction contractor to stop work if suspected contamination is identified, cordon off areas of suspected contamination, take appropriate health and safety measures, have a trained individual conduct sampling and testing of suspected material, and, if contamination is found to be greater

than regulatory limits, notify the BLM and the Kern County Public Health Department, and document all actions. Contamination from hazardous materials at the TWP site would be reduced with the implementation of recommended mitigation measures, but impacts would not be completely avoided.

If blasting is required during construction, the use of explosives at the TWP site could pose a hazard to personnel or serve as a wildfire ignition source. A large wildfire would pose hazards both to personnel and the public. A Blasting Plan would be developed (refer to Section 2.4.5) to ensure that explosives shall be used only within specified times and at specified distances from sensitive wildlife or streams and lakes, as established by the BLM or other federal and State agencies. In the event that blasting is required, Mitigation Measure PH-3 has been recommended to ensure that impacts from blasting would be minimized. Impacts would be reduced, but not completely avoided.

Herbicides, if used for vegetation control around towers and other Project facilities, could result in adverse health effects to the public, maintenance personnel, wildlife, or sensitive vegetation if herbicides are handled improperly or chemical drift occurs away from the target area. The Applicant or contractor applying herbicides would have all the appropriate State and local herbicide applicator licenses and comply with all State and local regulations regarding herbicide use. Mitigation Measure PH-4 would avoid potential impacts from herbicide use. Adverse health effects to the public, maintenance personnel, wildlife, or sensitive vegetation would not occur.

Solid wastes produced during construction of the Proposed Action would include containers, dunnage (support/padding for materials), and packaging materials for turbine components, and miscellaneous wastes associated with assembly activities. Solid waste resulting from the presence of the construction work crews would include food scraps and other putrid or rotten wastes. All such wastes are expected to be nonhazardous, and would be containerized on-site and periodically removed by commercial haulers to existing off-site, appropriately permitted disposal facilities. No adverse hazardous materials impacts from solid waste would occur.

Emergency Response

The TWP site is in a rural area with relatively easy emergency access. Per the Site Safety and Security construction BMPs identified in Section 2.4.5, temporary fencing would be installed around staging areas, storage yards, and excavations during construction to limit public access. This fencing, along with perimeter fencing and security gates, could physically interfere with emergency vehicle access or personnel evacuation from the TWP site. The type and height of this security fence, and the need for temporary security fencing around temporary construction areas, would be determined based on an assessment of risk prior to commencement of construction. It is assumed all fence gates would remain locked whenever these facilities are unattended.

During the construction phase, access roads would have gates or signs as necessary to control public access to the site for safety reasons. Heavy construction-related traffic could interfere with emergency response to the TWP site or emergency evacuation procedures for an emergency such as a wildfire, a natural gas pipeline explosion, or a chemical spill at or in the vicinity of the TWP

site. Heavy construction-related traffic could also potentially interfere with emergency response to residences in the Project vicinity.

To ensure emergency access to and within the TWP site during construction, Mitigation Measure PH-6 has been recommended. This would require the Applicant to appoint an Emergency Response Liaison to coordinate the reduction of construction-related traffic for the duration of any emergency at or near the Project site, including assurance of access for emergency vehicles to the Project site. Additionally, as discussed in Section 4.16, Transportation and Public Access, Mitigation Measure TR-1 requires the Applicant to prepare a Construction Traffic Control Plan**,** which would address and ensure emergency access vehicle movement to the site. Implementation of Mitigation Measures PH-5 and TR-1 would reduce impacts to emergency access and response.

Public Health

Inhalation of airborne spores is possible after soil disturbance. If the TWP site is underlain by soils containing the spores, construction activities could release spores and expose workers. The current public health status of residents of rural Kern County is evaluated as it relates to environmental health factors that could be potentially affected by the Proposed Action. Vector-borne disease incidence is a potential issue of concern related to construction.

Vector-Borne Diseases. Implementation of the Proposed Action would involve construction that could result in small areas of standing water from dewatering activities and batch plant operations, trash piles, or open containers that could provide breeding areas for mosquitoes, flies, or rodents. These potential disease vectors could pose a hazard to personnel or the public. Mitigation Measure PH-6 would prohibit standing water, trash piles, and open containers from accumulating at the Project site.

Construction of TWP would occur in an area favorable to the growth of the Valley Fever vector, the fungus *Coccidioides immitis*, which grows in soils in areas of low rainfall, high summer temperatures, and moderate winter temperatures. Project construction would disturb the soil and potentially cause the fungal spores, if present, to become airborne, putting construction personnel and wildlife at risk of contracting Valley Fever. In extreme cases the disease can be fatal. The Dust Control plan identified in Section 2.4.5 requires a number of dust suppression activities during Project construction. These dust suppression techniques would minimize the spread of fungal spores and would reduce impacts regarding Valley Fever, but impacts would not be completely avoided.

Intentionally Destructive Acts

Depending on the severity of the event, an intentionally destructive act could damage or destroy fixed components of a wind facility, resulting in economic, safety, and environmental consequences. Equipment used in constructing the wind facility could also be impacted, potentially resulting in loss of life. However, consequences of an intentionally destructive act, including sabotage or terrorist attack on a wind facility would be expected to be of low probability considering the large areal extent of the facilities, the lack of on-site personnel, and the relatively minor impact on the total energy grid system. The potential consequences of such events would be site-specific, unable to forecast, and unlikely to occur.

Operation and Maintenance

Aircraft Operations

Hazards to flight include visual and electronic forms of interference with aircraft operations. Land use development that may cause an increase in the level of attraction to birds is also considered a hazard. Wind energy projects close to airports pose a potential hazard to aviation due to the possibility of electromagnetic interference from the power plant and transmission lines as well as interference with the radar tracking of airplanes and weather.

Safety hazards to aircraft operations would potentially occur during operation and maintenance of the Proposed Action. As discussed earlier under "Construction," the FAA requires a notice of proposed construction for a project so that it can determine whether it would adversely affect commercial, military, or personal air navigation safety. Implementation of Mitigation Measure PH-1 would reduce operation and maintenance impacts to aircraft operations and protected airspace for commercial, military, or civilian air navigation.

Hazardous Materials

Operation of the Proposed Action would require the use of limited amounts of various petrochemicals, including fuels, lubricants, and solvents to operate and maintain equipment for maintenance activities. Project operations would likely require the use of transformer oil at the existing substation. However, none of the hazardous materials would be stored on the TWP site and only used onsite on an as needed basis.

Operation of the Project could result in a potentially significant hazard to the public or personnel if a hazardous material spill or leak were to occur. The Hazardous Materials Management Plan would require the TWP to comply with all measures included in the Applicant Program of Development (POD) submitted to the BLM. The Applicant's POD identifies measures to reduce potential fuel spills during operation including:

- All refueling should occur in a designated fueling area that includes a temporary berm to limit the spread of any spill.
- Drip pans should be used during refueling to contain accidental releases.
- Drip pans should be used under fuel pump and valve mechanisms of any bulk fueling vehicles parked at the construction site.
- Spills should be immediately addressed per the appropriate spill management plan, and soil cleanup and soil removal initiated if needed.

Implementation of these BMPs would reduce potential impacts from the release of motor vehicle fuel or transformer oil, but impacts would not be completely avoided.

Solid wastes produced during the operational phase would be very limited largely due to the lack of daily activity at the site and use of offsite facilities for O&M activities. However, all wastes

are expected to be nonhazardous, and would be containerized on-site and periodically removed by commercial haulers to existing off-site, appropriately permitted disposal facilities. No adverse impacts related to solid waste would occur.

Emergency Response

The TWP site would be in a rural area with perimeter fencing and security gates that could physically interfere with emergency vehicle access or personnel evacuation from the Project site. During Project operation and maintenance, minimal traffic is expected to occur and is not likely to interfere with emergency response activities. As discussed in Section 4.16, Transportation and Public Access, Mitigation Measure TR-2 ensures all access roads will be designed consistent with Kern County standards and require approval of the Kern County Roads Department. Completion of access roads consistent with these standards would ensure adequate emergency access and movement within the site.

Public Health

Operations of the Proposed Action could potentially affect public health status of residents of rural Kern County. Vector-borne disease incidence, potential for Valley Fever, as well as potential issues related to electro-magnetic fields (EMFs) are potential issues of concern related to Project operations.

Vector-Borne Diseases. As with construction, implementation of the TWP may involve operations activities that could result in small locations of standing water, trash piles, or open containers that could provide breeding areas for mosquitoes, flies, or rodents. These potential disease vectors could pose a hazard to personnel or the public. Mitigation Measure PH-6 would prohibit standing water, trash piles, and open containers from accumulating at the site.

Valley Fever. Operations and maintenance activities could potentially disturb soil and cause fungal spores related to Valley Fever to become airborne, potentially putting operations personnel and wildlife at risk. However, unlike construction, soil disturbance during operations would be occasional and of a reduced magnitude. Therefore operations activities are unlikely to cause impacts to public health.

Electromagnetic Fields. Electric voltage (electric field) and electric current (magnetic field) from transmission lines create EMFs. Currently, the State has not adopted any specific limits or regulation on EMF levels related to electric power facilities. However, there are no residences located within the vicinity of the Project as such; long-term exposure to EMFs is not expected to occur.

Shadow Flicker. With the installation of WTGs, the TWP has the potential to result in a phenomenon known as “shadow flicker.” Shadow flicker is the alternating change in light intensity that occurs when rotating WTG blades cast moving shadows on the ground or on structures. Shadow flicker effects may have the potential to cause seizures in individuals prone to epilepsy. Flicker from turbines that interrupt or reflect sunlight at frequencies greater than three Hertz (equivalent to 180 rotations per minute) poses a potential risk of inducing photosensitive seizures (Harding et al., 2008). The rotor speed of WTGs identical to those associated with the

TWP is between six and 14.8 rotations per minute, which is substantially slower than the slowest speed that has the potential to cause photosensitive epilepsy.

In addition, there are no sensitive receptors (residences) in the vicinity of the TWP that would be exposed to shadow flicker from the proposed WTGs. As a result of the extremely slow rotation speed of rotors and the low exposure of residents to any shadow flicker, the TWP is not considered to have the potential to result in impacts to individuals with photosensitive epilepsy.

Intentionally Destructive Acts

Fixed components of a wind facility could be damaged or destroyed from an intentionally destructive act, resulting in economic, safety, and environmental consequences. Equipment used in servicing the wind facility could also be impacted, potentially resulting in loss of life. As discussed above for construction, in general, the consequences of an intentionally destructive act, including sabotage or terrorist attack, on a wind facility would be expected to have a low probability and impossible to predict. The potential consequences of such events would be site-specific and unlikely to occur.

Decommissioning

Aircraft Operations

Safety hazards to aircraft operations would potentially occur during decommissioning of the TWP. As discussed earlier under “Construction” and “Operation and Maintenance,” the FAA requires a notice of proposed construction for a project so that it can determine whether it would adversely affect commercial, military, or personal air navigation safety. Implementation of Mitigation Measure PH-1 for decommissioning activities would reduce safety hazards during decommissioning to commercial, military, or civilian air navigation, but impacts would not be completely avoided.

Hazardous Materials

The dismantling of the Proposed Action facilities could result in substantial quantities of solid and industrial wastes. Fluids drained from turbine drive train components (e.g., lubricating oils, hydraulic fluids, coolants) are likely to be similar in chemical composition to spent fluids removed during routine maintenance and would be managed in the same manner as analogous to maintenance-related wastes. Tower segments are expected to be stored onsite for a brief period and eventually sold as scrap material. Likewise, turbine components (emptied of their fluids) may have some salvage value. Recycling turbine components would diminish any impacts created by solid wastes during decommissioning. Electrical transformers are expected to be removed from the Project site and made available for other applications elsewhere (in most cases, without the need for removing dielectric fields). Decommissioning would also result in substantial amounts of broken concrete from tower and building foundations, as well as rock or gravel from on-site roads or electrical substations. All such materials are expected to be salvageable for use in road-building or bank stabilization projects. Miscellaneous materials without salvage value are expected to be nonhazardous and would be removed from the Project site by a licensed hauler and delivered to appropriately permitted disposal facilities.

As discussed under "Construction" and "Operation and Maintenance," implementation of the Hazardous Materials Management Plan, as well as Mitigation Measures PH-2 through PH-4 would reduce potential adverse impacts from the use of hazardous materials at the TWP site.

Emergency Response

As described under "Construction," the TWP site would be in a rural area with perimeter fencing and security gates that could physically interfere with emergency vehicle access or personnel evacuation from the site.

Similar to the construction phase, during decommissioning, gates or signs would be installed on access roads, as necessary, to control public access to the Project site for safety reasons. Heavy traffic could interfere with emergency response to the TWP site or evacuation procedures in the event of an emergency such as a wildfire or a chemical spill. Heavy traffic could also potentially interfere with emergency response to residences in the TWP vicinity. Implementation of Mitigation Measures PH-5 and TR-1 at the time of decommissioning would reduce potential adverse impacts to emergency access and response.

Public Health

TWP decommissioning activities are expected to have similar public health impacts as construction of the Project. Vector-borne disease incidences would be the primary potential issue of concern related to decommissioning activities.

Vector Borne Diseases. As with construction, decommissioning activities could result in standing water, trash piles, or open containers that could provide breeding areas for mosquitoes, flies, or rodents. These potential disease vectors could pose a hazard to personnel or the public. Implementation of Mitigation Measure PH-6 during decommissioning would prohibit standing water, trash piles, and open containers from accumulating at the site.

Valley Fever. Decommissioning of the TWP would occur in an area favorable to the growth of the Valley Fever vector. Decommissioning activities could disturb soil and cause the fungal spores to become airborne, potentially putting construction personnel and wildlife at risk of contracting Valley Fever. BMPs and mitigation required and included as part of the Proposed Action for dust control would minimize the spread of fungal spores during decommissioning activities.

Intentionally Destructive Acts

Depending on the severity of the event, an intentionally destructive act could damage fixed components of a wind facility, resulting in economic, safety, and environmental consequences. Equipment used in dismantling the wind facility could also be impacted, potentially resulting in loss of life. Consequences of an intentionally destructive act, including sabotage or terrorist attack on a wind facility would be expected to be similar to those discussed under seismic hazards and hazardous materials regarding accidental and natural events. The potential consequences of such events would be site-specific and unlikely to occur.

Alternative 2 - Modified Proposed Action (37 WTGs)

Construction

Aircraft Operations

Potential safety hazard impacts to aircraft operations during construction of Alternative 2 would be the same as described under "Construction" for the Alternative 1 (Proposed Action). However, because there would be less WTGs the Project site would be smaller for Alternative 2 than for the Proposed Action, Alternative 2 would involve a smaller geographic area and shorter construction and decommissioning periods than the Proposed Action. Implementation of Mitigation Measure PH-1 as part of Alternative 2 would reduce safety hazards during construction to commercial, military, or civilian air navigation.

Hazardous Materials

Potential hazardous materials impacts during construction of Alternative 2 would be the same as described under "Construction" for Alternative 1. However, because there would be less WTGs the Project site would be smaller for Alternative 2 than for the Proposed Action, Alternative 2 would involve a smaller geographic area and shorter construction and decommissioning periods than the Proposed Action. Implementation of BMPs identified in the POD and Mitigation Measure PH-2 as part of Alternative 2 would reduce potential impacts from the use or release of hazardous materials, but impacts would not be completely avoided.

Emergency Response

Potential impacts to emergency response during construction of Alternative 2 would be the same as described under "Construction" for Alternative 1. However, because there would be less WTGs the Project site would be smaller for Alternative 2 than for the Proposed Action, Alternative 2 would involve a smaller geographic area and shorter construction and decommissioning periods than the Proposed Action. Implementation of Mitigation Measures PH-5 and TR-1 as part of Alternative 2 would reduce potential impacts to emergency access, but impacts would not be completely avoided.

Public Health

Potential impacts to public health during construction of Alternative 2 would be the same as described under "Construction" for Alternative 1. However, the geographic area within which Alternative 2 would be developed would be smaller than the Proposed Action, and so limit the area within which hazards to the public, workers, and the environment could result. Implementation of Mitigation Measure PH-6 as part of Alternative 2 would reduce potential impacts, but impacts would not be completely avoided.

Intentionally Destructive Acts

Potential impacts from intentionally destructive acts, including sabotage or terrorism during construction of Alternative 2 would be the same as described under "Construction" for Alternative 1. However, because there would be less WTGs the Project site would be smaller for Alternative 2 than for the Proposed Action, Alternative 2 would involve a smaller geographic area and shorter construction and decommissioning periods than the Proposed Action. The potential consequences of such events would be site-specific and unlikely to occur.

Operation and Maintenance

Aircraft Operations

Potential safety hazard impacts to aircraft operations during operation and maintenance of Alternative 2 would be the same as described under "Operation and Maintenance" for Alternative 1. However, the geographic area within which Alternative 2 would be developed would be smaller than the Proposed Action, and so limit the area within which hazards to the public, workers, and the environment could result. Implementation of Mitigation Measure PH-1 as part of Alternative 2 would reduce safety hazards during operation and maintenance to commercial, military, or civilian air navigation, but impacts would not be completely avoided.

Hazardous Materials

Potential hazardous materials impacts during operation and maintenance of Alternative 2 would be the same as described under "Operation and Maintenance" for Alternative 1. However, the geographic area within which Alternative 2 would be developed would be smaller than the Proposed Action, and so limit the area within which hazards to the public, workers, and the environment could result. Implementation of BMPs identified in the POD and Mitigation Measure PH-2 as part of Alternative 2 would avoid potential impacts from the use or release of hazardous materials, but impacts would not be completely avoided.

Emergency Response

Potential impacts to emergency response during operation and maintenance of Alternative 2 would be the same as described under "Operation and Maintenance" for Alternative 1. During operation and maintenance, minimal traffic is expected to occur and is not likely to interfere with emergency response activities. Additionally, the implementation of Mitigation Measure TR-2 as part of Alternative 2 would ensure all access roadways would be built to Kern County Roads Department specifications and approval, thereby reducing any potential impacts to emergency access and response.

Public Health

Potential impacts to public health during operation and maintenance of Alternative 2 would be the same as described under "Operation and Maintenance" for Alternative 1 with the exception that by eliminating the northern section of the Alternative 1 site, the WTGs located closest to residential receptors would be removed. Thus, the removal of WTGs nearest these receptors would further reduce the potential the Project to result in a shadow flicker phenomenon.

Intentionally Destructive Acts

Potential impacts from intentionally destructive acts, including sabotage or terrorism during construction of Alternative 2 would be the same as described under "Operation and Maintenance" for the Alternative 1 (Proposed Action). However, the geographic area within which Alternative 2 would be developed would be smaller than the Proposed Action, and so limit the area within which hazards to the public, workers, and the environment could result. The potential consequences of such events would be site-specific and unlikely to occur.

Decommissioning

Aircraft Operations

Potential safety hazard impacts to aircraft operations during decommissioning of Alternative 2 would be the same as described under "Decommissioning" for the Alternative 1 (Proposed Action). Alternative 2's smaller footprint would constrain the area within the accidents or upsets could occur and thereby release hazardous materials. Consequently, the hazards and hazardous material-related impacts associated with decommissioning Alternative 2 would be reduced relative to the Proposed Action. Implementation of Mitigation Measure PH-1 as part of Alternative 2 would reduce safety hazards during decommissioning to commercial, military, or civilian air navigation, but impacts would not be completely avoided.

Hazardous Materials

Potential hazardous materials impacts during decommissioning of Alternative 2 would be the same as described under "Decommissioning" for the Alternative 1 (Proposed Action). Alternative 2's smaller footprint would constrain the area within the accidents or upsets could occur and thereby release hazardous materials. Consequently, the hazards and hazardous material-related impacts associated with decommissioning Alternative 2 would be reduced relative to the Proposed Action. Implementation of measures similar or identical to Alternative 1 BMPs and Mitigation Measures PH-2 as part of Alternative 2 during decommissioning of Alternative 2 would reduce potential impacts from the use or release of hazardous materials, but impacts would not be completely avoided.

Emergency Response

Potential impacts to emergency response during decommissioning of Alternative 2 would be the same as described under "Decommissioning" for the Alternative 1 (Proposed Action). Alternative 2's smaller footprint would constrain the area within the accidents or upsets could occur and thereby release hazardous materials. Consequently, the hazards and hazardous material-related impacts associated with decommissioning Alternative 2 would be reduced relative to the Proposed Action. This Implementation of a measure similar or identical to Mitigation Measures PH-6 and TR-1 as part of Alternative 2 during decommissioning would reduce potential impacts to emergency access, but impacts would not be completely avoided.

Public Health

Potential impacts to public health during decommissioning of Alternative 2 would be the same as described under "Decommissioning" for the Alternative 1 (Proposed Action). Alternative 2's smaller footprint would constrain the area within the accidents or upsets could occur and thereby release hazardous materials. Consequently, the hazards and hazardous material-related impacts associated with decommissioning Alternative 2 would be reduced relative to the Proposed Action. Implementation of a measure similar or identical to Mitigation Measure PH-6 as part of Alternative 2 during decommissioning would reduce potential impacts, but impacts would not be completely avoided.

Intentionally Destructive Acts

Potential impacts from intentionally destructive acts, including sabotage or terrorism during construction of Alternative 2 would be the same as described under "Decommissioning" for the Alternative 1 (Proposed Action). Alternative 2's smaller footprint would constrain the area within the accidents or upsets could occur and thereby release hazardous materials. Consequently, the hazards and hazardous material-related impacts associated with decommissioning Alternative 2 would be reduced relative to the Proposed Action. The potential consequences of such events would be site-specific and unlikely to occur.

Alternative 3 - No Action Alternative

Under this alternative, the BLM would not approve the TWP and would not amend the CDCA Plan. As a result, no wind energy project would be constructed, and the BLM would continue to manage the site lands under its jurisdiction consistent with the existing land use designation in the CDCA Plan (as amended). No action would occur and existing conditions relevant to public health and safety would continue.

Alternative 4 - No Project; Unsuitable

Under this alternative, the BLM would not approve the TWP and would amend the CDCA Plan to make the site unavailable for future wind energy development. As a result, no wind energy project would be constructed on the site, and the BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan (as amended). No action would occur and no future wind development on the site would occur. Existing conditions relevant to public health and safety would continue.

Alternative 5 - No Project; Suitable

Under this alternative, the BLM would not approve the TWP and would amend the CDCA Plan to allow for other wind projects on the site in the future. No impacts associated with the TWP would occur. In the future, if another wind development project is implemented, similar impacts to public health and safety as those described for the Proposed Action could occur.

4.11.3 Cumulative Impacts

Geographic Extent/Context

The geographic scope for cumulative impacts from public health and safety is typically highly localized. Hazardous materials impacts and other hazards discussed in this section would primarily be within the TWP site boundary. However, the BLM Ridgecrest Office Fire and Aviation service area is considered pertaining to interference with emergency response. During the construction period for the TWP, interference with emergency response vehicles can result from construction traffic and other projects in the vicinity of the TWP site, in addition to local roadways providing access to the site.

The TWP area consists of undeveloped land, open space land, and scattered rural residences. Within the undeveloped and open space land and residential areas there is little likelihood of

significant soil or groundwater contamination, based on a lack of uses that would involve hazardous materials. Within the limited commercial and industrial land use areas (historic and current), there is the potential for soil or groundwater contamination by hazardous substances such as heavy metals and vehicle fuels. The continued development of lands within the localized area (particularly renewable energy development) would result in the continued potential for public health and safety risk factors as any former contaminated sites undergo cleanup or are developed for new uses. However, sites with known environmental contamination would be required by law to be investigated and remediated in accordance with regulatory agency standards prior to redevelopment. In addition, areas with previously unknown contamination would likely be discovered during planning, followed by the required reporting and cleanup.

Existing Cumulative Conditions

The TWP area consists of undeveloped land, open space land, and renewable energy construction (MWEP and PWEP). Within the undeveloped and open space land there is little likelihood of significant soil or groundwater contamination, based on a lack of uses that would involve hazardous materials. Within the MWEP and PWEP areas, there is the potential for soil or groundwater contamination by hazardous substances such as heavy metals and vehicle fuels. The continued development of lands within the localized area (particularly renewable energy development) would result in the continued potential for public health and safety risk factors as any former contaminated sites undergo cleanup or are developed for new uses. However, sites with known environmental contamination would be required by law to be investigated and remediated in accordance with regulatory agency standards prior to redevelopment. In addition, areas with previously unknown contamination would likely be discovered during planning, followed by the required reporting and cleanup.

Reasonably Foreseeable Projects

A wide variety of past and present development projects could contribute to the cumulative conditions for public health and safety in regards to emergency response in the cumulative analysis area. Table 4.1-1 of this DEIS/PA lists cumulative projects in the vicinity of the TWP site and surrounding area. Consideration of the projects listed in Kern County proximate to the TWP site identified in Table 4.1-1 and shown on Figure 4.1-1 were used to develop this analysis of cumulative effects for public health and safety.

Several types of development projects could contribute to the cumulative impact of the TWP and alternatives, including renewable energy projects. Such past and existing projects could combine with potential impacts of the TWP or an alternative to affect public health and safety within the geographic extent of this cumulative analysis.

Many of these projects have either undergone independent environmental review pursuant to NEPA and/or CEQA or will do so prior to approval. Multiple projects included in the cumulative projects list described in Table 4.1-1 will undergo construction during construction of the TWP and their overlapping effects were considered in the cumulative impacts analysis.

Construction, Operation and Maintenance, Decommissioning

Several types of development projects could contribute to the cumulative impact of the TWP and alternatives, including renewable energy projects. Such past and existing projects could combine with potential impacts of the TWP or an alternative to affect public health and safety within the geographic extent of this cumulative analysis. Many of these projects have either undergone independent environmental review pursuant to NEPA and/or CEQA or will do so prior to approval.

Safety hazards to aircraft operations could occur during construction or operation of the TWP. This impact could have the potential to combine with impacts of other projects because of the localized nature of a number of other wind energy projects within the area. However, the required compliance with FAA regulations per Mitigation Measures PH-1, and the FAA requirement that all other development receive a notice of No Hazards to Air Traffic from the FAA for all project features with the potential to conflict with FAA regulations related to obstruction hazards, would reduce this potential impact. Therefore, construction of the TWP would not have the potential to combine with impacts from past, present, or reasonably foreseeable projects, and the TWP would not contribute to cumulative impacts.

A limited amount of hazardous material may be used during construction and operation of the TWP but would be handled and stored on-site in compliance with the requirements set forth in the applicable codes and regulations. Implementation of project specific BMPs would reduce potential impacts. As this impact would be site-specific, it is not expected to combine with similar impacts of past, present, or reasonably foreseeable projects.

If blasting is required during construction, the implementation of Mitigation Measure PH-3 would ensure that impacts from blasting would be minimized. This impact would be site-specific and is not expected to combine with similar impacts of past, present, or reasonably foreseeable projects.

Herbicides may be used for vegetation removal during construction. To reduce potential TWP impacts from herbicides, implementation of Mitigation Measure PH-4 would occur. This impact would be site-specific and is not expected to combine with similar impacts of past, present, or reasonably foreseeable projects.

Heavy construction-related traffic could interfere with emergency response to the TWP site or emergency evacuation procedures in the event of an emergency such as a wildfire, a natural gas pipeline explosion, or a chemical spill at the Project site. Heavy construction-related traffic could also potentially interfere with emergency response to residences in the vicinity. To ensure emergency access to the TWP site during construction, Mitigation Measure PH-5 would require the Applicant appoint an Emergency Response Liaison to coordinate the reduction of construction-related traffic for the duration of any emergency at or nearby the Project site and prepare a construction traffic control plan that includes assurance of access for emergency vehicles to the TWP site.

This impact has the potential to combine with other current and future projects that would generate high volumes of traffic on area roadways and whose construction schedules overlap with

that of the TWP by creating a cumulative traffic burden on regional roadways as a result of an abundance of construction vehicles. However, given the rural nature of the TWP area and the fact that most cumulative projects in the vicinity would not generate high volumes of traffic, the potential for a cumulative impact on emergency response is low. As such, TWP impacts relating to emergency response and access are not expected to combine with similar impacts of past, present, or reasonably foreseeable projects, and the TWP would not contribute to cumulative impacts.

With regard to generating disease vectors, TWP construction and operation could attract disease vectors by allowing standing water, trash piles, or open containers to accumulating at the site, potentially resulting in a hazard to construction personnel or the general public. However, implementation of Mitigation Measure PH-6 would reduce this impact to acceptable levels. Mitigation would reduce this impact to a level that would not combine with other projects with watering activities and BMPs to keep dust site specific. Therefore, impacts of the TWP would not have the potential to combine with impacts from past, present, or reasonably foreseeable projects.

Depending on the severity of the event, fixed components of a wind facility could be damaged or destroyed, resulting in economic, safety, and environmental consequences. Equipment used in constructing the wind facility could also be impacted, potentially resulting in loss of life. In general, the consequences of an intentionally destructive act, including sabotage or terrorist attack on a wind facility would be expected to be similar to those discussed under seismic hazards and hazardous materials regarding accidental and natural events. The potential consequences of such events would be site-specific and unlikely to occur. As such, TWP impacts are not expected to combine with similar impacts of past, present, or reasonably foreseeable projects, and the project would not contribute to cumulative impacts.

4.11.4 Mitigation Measures

PH-1: FAA Approval. Prior to issuance of building permits, the Applicant shall submit documentation to the BLM and Kern County Planning Department demonstrating a Determination of No Hazard to Air Navigation from the Federal Aviation Administration (FAA) of Form 7460-1 (Notice of Proposed Construction or Alteration). Documentation shall also be furnished to the BLM and Kern County Planning Department demonstrating that a copy of the approved form(s) has been provided to the United States Department of Defense. All Project components shall have lighting and marking required by the Federal Aviation Administration so not to create a hazard to air navigation. This mitigation measure shall apply to all phases of the Proposed Action (construction, operation and maintenance, and decommissioning) when there is the potential for impacts to aircraft operations.

PH-2: Hazardous Materials Spills or Discovery. If, during grading or excavation work, the contractor observes visual or olfactory evidence of contamination or if soil contamination is otherwise suspected, work near the excavation site shall be terminated, the

work area cordoned off, and appropriate health and safety procedures implemented for the location by the contractor's Health & Safety Officer. Samples shall be collected by an Occupational Safety and Health Administration-trained individual with a minimum of 40-hours hazardous material site worker training. Laboratory data from suspected contaminated material shall be reviewed by the contractor's Health and Safety Officer. If the sample testing determines that contamination is not present, work may proceed at the site. However, if contamination is detected above regulatory limits, the BLM and the Kern County Public Health Department shall be notified. All actions related to encountering unanticipated hazardous materials at the site shall be documented and submitted to the BLM for federal lands and the Kern County Public Health Department for County lands.

PH-3: Construction Blasting. If blasting is required, the Applicant shall contract with a blasting contractor with experience conducting blasting activities, licensed to use Class A explosives, and licensed as a contractor in the State of California. The blasting contractor shall prepare a blasting plan for the proposed blasting activities to prevent endangering worker safety. The blasting plan shall be submitted to the BLM for approval on federal lands and to the Kern County Department of Building and Safety for approval on County lands, in consultation with the Kern County Public Health Department, the Kern County Fire Department, and the applicable Air Pollution Control District(s). The blasting plan shall:

a. Describe procedures to be implemented to protect workers during blasting, such as using a signaling system to alert workers of an impending blast and using blasting mats to prevent or reduce the number of rock particles thrown into the air;

b. Describe procedures for proper storage and transportation of explosive materials, including protecting explosives from wildfires;

c. Prohibit blasting during extreme fire danger periods; and

d. Comply with the U.S. Bureau of Mines and the U.S. Department of the Interior Office of Surface Mining Reclamation and Enforcement guidelines for minimizing damage to structures from blasting.

PH-4: Herbicide Use. If herbicides are utilized, the contractor or personnel applying herbicides must have all the appropriate State and local herbicide applicator licenses and comply with all State and local regulations regarding herbicide use. 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 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.

PH-5: Emergency Response Liaison. The Applicant shall appoint an Emergency Response Liaison to coordinate the reduction of construction-related traffic for the duration of any emergency at or nearby the Project site. The BLM, Kern County Fire Department, Kern County Sheriff's Office, and the California Highway Patrol shall be provided with the construction schedule and the on-site contact information for the Liaison prior to construction. The Liaison shall be immediately reachable at all times during Project construction. The Liaison shall have radio contact with Project construction vehicles at all times to coordinate traffic reduction measures. In addition, the Liaison shall coordinate with the BLM, Kern County Fire Department, the Kern County Sheriff's Office and the California Highway Patrol to establish emergency procedures for access to the Project site in the event of an emergency.

PH-6: Vector Control. In order to eliminate the risk of generating disease vectors at the site, during Project construction and operations, the Applicant shall ensure that trash is stored in closed containers and removed from the site at regular intervals. Open containers shall be inverted and construction ditches shall not be allowed to accumulate water. Construction, operation and maintenance, and decommissioning activities shall not generate standing water. Naturally occurring depressions, drainages, and pools at the site shall not be drained or filled without consulting with the appropriate resource agency (BLM, Kern County, U.S. Army Corps of Engineers (ACOE), U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Game (CDFG)) and obtaining the appropriate permits. The environmental monitor will ensure that standing water and large quantities of trash do not accumulate on site.

4.11.5 Residual Impacts After Mitigation

Mitigation Measure PH-1 would substantially reduce potential impacts to aircraft operations by requiring compliance with conditions stipulated by the FAA. This measure would ensure that the TWP would pose no hazards to air navigation and would not compromise the operational mission of the DOD Airspace Consultation Area. Mitigation Measures PH-2 through PH-4 would substantially reduce potential impacts associated with the use, storage, or handling of hazardous substances or the existence of other hazardous conditions at the TWP site, by requiring the implementation of preventive measures and precautions. These measures also require that necessary licenses and permits be obtained, and that hazardous substances only be handled and used by properly trained and certified personnel. Mitigation Measure PH-6 would substantially reduce risk of generating disease vectors by implementing preventive measures, avoiding the establishment of conditions that might promote disease, and monitoring conditions at the TWP site.

Because these mitigation measures themselves would not disturb or disrupt the natural environment, including the emission of pollutants or release of hazardous substances, and would not threaten the health or safety of people, their implementation would not result in adverse impacts.

Although unlikely, following implementation of BMPs and mitigation measures provided in Section 4.11.11, it is possible that an accidental hazardous material release could occur and could cause a public health and safety risk to the human environment. No other residual impacts to public health and safety are expected to occur as a result of construction, operation and maintenance, and/or decommissioning of the TWP or an alternative.

4.12 Recreation

4.12.1 Methodology for Analysis

The following discussion evaluates potential impacts of the TWP and alternatives on recreational resources. Existing and planned recreational resources were identified through a variety of sources. Federal, State, and local (County) plans, such as land management plans and general plans, were consulted to describe the Project regions with regard to recreation. Known recreational uses in the Project area include hiking, backpacking and long term camping in established Federal, State, or local recreation areas and/or wilderness areas.

The CDCA Plan notes that the diverse landscape of the California desert provides for a variety of physical settings (BLM, 1980). Further, the CDCA Plan identifies the wide variety of desert recreation uses, ranging from off-road vehicles to outdoor preservationists, and the increasing challenge to accommodate these varied and sometimes competing uses. However, this Section focuses on non-transportation-related recreational opportunities. For impacts to Off Highway Vehicle Resources users, see Section 4.16 Impacts on Transportation and Public Access.

4.12.2 Discussion of Direct and Indirect Impacts

Alternative 1 - Proposed Action (40 WTGs)

The TWP site does not have public access nor does it contain any designated recreational resources such as OHV routes or camping grounds, so the construction, operation, maintenance, and decommissioning of the TWP would not directly disrupt any recreational resources onsite. Project construction and operation could, however, adversely affect recreational experiences along the PCT, which passes along the eastern edge of the western-most parcel that makes up the Project site by causing construction related disturbances on the PCT. Construction activities associated with the Proposed Action could cause direct and indirect impacts on noise, fugitive dust, and truck and other vehicle ingress and egress to the construction site. Day users, hikers, and RV campers would be restricted in the area of the PCT which passes along the Project site for dispersed recreational opportunities and related experiences and benefits during construction activities.

Visual intrusions from the wind towers could affect visitors seeking experiences for a natural setting during construction and operation activities. Visual impacts are discussed in Section 4.18, Visual Resources. As an indirect effect of the TWP, campers, hikers, backpackers, could compensate for the loss of these public lands by utilizing other lands near the vicinity of the Project area for their recreational experiences and benefits. This could result in more concentrated use of those areas, leading to loss of some native vegetation, wildlife habitat fragmentations or loss, elevated soil loss, increases in noise, and possible temporary declines in air quality from more concentrated vehicle use in smaller available area. However, this impact would be minimal because, as discussed above, the proposed site does not contain designated recreational resources.

Separate and apart from the PCT, there would be no effects to off-site recreational users of specially-designated lands (including wilderness and ACECs) because these types of recreational areas are not located within close proximity to the TWP. The nearest of these specially-designated lands is the Horse Canyon ACEC, which is located approximately 14 miles away and is not expected to be affected by the Proposed Action. For a discussion of potential impacts to OHV route access to wilderness areas, see Section 4.16, Transportation and Public Access - Off Highway Vehicle Resources. For a discussion of the potential impacts to visual quality from wilderness areas and ACECs see Section 4.18, Visual Resources.

Alternative 2 - Modified Proposed Action (37 WTGs)

This alternative would eliminate the western-most parcel from the Project, and would result in the installation 3 fewer wind turbines, as a result this alternative would impacts similar to, but slightly reduced, when compared to the Proposed Action. For example, the impacts to the PCT would be reduced because the western-most parcel is the closest portion of the TWP to the PCT.

Alternative 3 - No Action Alternative

If this no action alternative were selected, none of the anticipated recreation-related impacts of the Proposed Action would occur. Instead, the land on which the TWP is proposed would become available to other uses consistent with CDCA Plan.

Alternative 4 - No Project; Unsuitable

If this alternative were selected, the CDCA Plan would be amended to make the site unavailable for future wind energy development and no impacts associated with the TWP would occur. Other use opportunities consistent with the CDCA Plan would remain available.

Alternative 5 - No Project; Suitable

If this alternative were selected, the BLM would not approve the TWP, but would amend the CDCA Plan to allow for another wind project on the TWP site in the future. A future project would potentially impact recreational resources in a similar degree/manner as the Proposed Action as the quantity of land disturbed by such a future development would be comparable to the TWP.

4.12.3 Cumulative Impacts

Geographic Extent/Context

The geographic scope of the cumulative effects analysis for general recreation on public lands includes the area in the vicinity of the proposed TWP site, an approximate 40-mile radius, encompassing Horse Canyon and Middle Knob ACEC, which are located 14 and 15 miles northeast, respectively; Jawbone/Butterbredt ACEC, which is located 27 miles northeast; Desert Tortoise Natural Area, which is located 30 miles northeast; and Freemont-Kramer DWMA, which

is located 30 miles northeast and 36 miles southeast. The geographic scope was established based on boundaries of the affected resources.

Existing Cumulative Conditions

Past and present land uses occurring in the vicinity of the TWP site consist of recreational activities along the PCT and surrounding grazing land. Potential cumulative recreation impacts surrounding the TWP site may result from the new structures and activities that could restrict access to recreational resources and/or physically degrade existing recreational facilities and resources.

Reasonably Foreseeable Projects

Present and reasonably foreseeable future actions, including other renewable energy projects, making up the cumulative scenario are identified in Section 4.1. These projects would add large- and small-scale industrial, utility-related and other uses in the region, resulting in direct preclusion of access to recreational lands that would be dedicated to other, non-recreational uses. This would be a change in the type of use. Although the Proposed Action's effects on recreation would be low for the TWP area, this impact, in combination with past, present, and proposed and reasonably foreseeable projects in eastern Kern County could have an impact on recreation opportunities and experiences of users, communities, and regional populations.

Construction, Operation and Maintenance, Decommissioning

Construction activities associated with the Proposed Action and alternatives are expected to result in short-term adverse impacts to recreational resources associated with the PCT, which passes along the eastern edge of the western-most parcel of the Project site. It is expected that some of the cumulative projects, which are not yet built may be under construction at the same time as the TWP. As a result, there may be substantial short-term impacts during construction of those cumulative projects related to recreational resources associated with the PCT, and the TWP could contribute to these possible short-term cumulative impacts.

Regionally, there have been both positive and negative impacts to recreational resources as a result of development projects within Kern County. Development of highway access to the region has provided direct vehicular access to open desert scenery for residents throughout southern California. This increased access improved the recreational experience for some users by making the area more accessible, but has detracted from the recreational experience for other users who prefer remote camping, hiking, and hunting away from populated areas.

Presently, as discussed above, numerous development projects, including the TWP, would temporarily remove large acreages of land from potential recreational use during the construction period. The combined effect of construction of past, present, and reasonably foreseeable projects in this area of Kern County would adversely affect recreation activities and potentially result in indirect impacts to the surrounding recreational resources.

Increases in use by Project personnel at any one recreation area during the operation period are not anticipated to be significant or result in a detectable physical deterioration of regional recreational resources because operation and maintained would not result in population increase or long-term influx of workers, rather, the operation and maintenance related to the Proposed Action and alternatives would be limited to day-to-day traffic from employees going to and from work. It is expected that most of the cumulative projects described above may be operational at the same time as the TWP. As a result of these projects, all other land uses would be precluded, including recreation opportunities, and these developments would adversely affect the viewscape, which would likely result in some users seeking out other areas of the desert for their activities (see the cumulative analysis in the Visual Resources section). As a result, there may be substantial long-term recreation impacts during operation of these cumulative projects as users seek out other areas for desert recreation.

Decommissioning activities would cause temporary, indirect disturbances to users of the recreation areas similar to those described under construction above. However, after the TWP has been decommissioned, the site would be returned to an undeveloped condition. There is potential for the decommissioning of other projects concurrently with the decommissioning of the TWP, which may result in cumulative impacts to recreation resources. The sites of other projects that may be decommissioned during the same period would also be returned to an undeveloped condition, similar to the Proposed Action. Impacts would be temporary due to the nature of decommissioning activities.

4.12.4 Mitigation Measures

The following mitigation measures would be imposed by the BLM to avoid or reduce impacts on the quality of the human environment. The following mitigation measures would avoid or minimize impacts on recreation:

> **REC-1:** No less than 60 days prior to construction, the Applicant shall coordinate construction activities and the TWP construction schedule with the authorized officer for the recreation areas of the PCT that may be affected. The Applicant shall schedule construction activities to avoid heavy recreational use periods of the PCT in coordination with and at the discretion of the authorized officer. The Applicant shall locate construction equipment to avoid temporary preclusion of recreation areas in accordance with the recommendation of the authorized officer. The Applicant shall document its coordination efforts with the authorized officer and provide this documentation to the Lead Agencies and affected jurisdictions at least 30 days prior to construction.

4.12.5 Residual Impacts After Mitigation

The indirect effects to the PCT would remain but be minimized through the application of mitigation measure REC-1. There would be no other adverse impacts to recreational resources as a result of construction, operation and maintenance, or decommissioning of the TWP or its alternatives.

4.13 Social and Economic Impacts

4.13.1 Impact Assessment Methodology

The social and economic analyses of the Proposed Action comply with the NEPA requirements. The social and economic impact analyses evaluate Project-related changes on the existing local population and economy (including employment and the relationship to local housing conditions). The Proposed Action's projected peak employment is used to analyze construction employment impacts to the local communities, their social character and their economies. Potential effects to the local area's social character are evaluated based on the findings of the economic impact analysis.

Impacts on public services related to health and safety (e.g. police protection, fire protection and emergency medical services) are analyzed in Section 4.11, Public Health and Safety. Potential effects on parks and recreational opportunities are considered in Section 4.12, Recreation.

The Council on Environmental Quality Regulations for Implementing the Procedural Provisions of the NEPA (40 CFR Part 1500 - 1508) provides no specific thresholds of significance for socioeconomic impact assessments. Significance varies, depending on the setting of the Proposed Action (40 CFR 1508.27[a]), but 40 CFR 1508.8 states that indirect effects may include those that are growth-inducing and others related to induced changes in the pattern of land use, population density, or growth rate.

4.13.2 Discussion of Direct and Indirect Impacts

Alternative 1 - Proposed Action (40 WTGs)

This section presents the direct and indirect effects on population, income, employment, and housing as a result of expenditures, income, employment, and tax revenues generated by the TWP. The discussion of socioeconomic impacts from the Proposed Action is separated into three categories: construction, operations and maintenance, and decommissioning.

Construction

As discussed in Chapter 2, construction of the TWP would require a peak workforce of approximately 75 workers, and employment over the duration of the construction period would be the equivalent of 50 full-time jobs.

Changes to Local Employment or Labor Force

Construction employment for the Proposed Action would include skilled or semi-skilled workers to construct Project infrastructure and facilities. As indicated in Table 3.13-3, the Bakersfield MSA contains a large construction workforce (in excess of 16,500 workers) in proportion to the required construction labor force requirements (75 workers) for the Proposed Action. It is assumed that the majority of construction personnel would live within this MSA or from other

nearby counties (staying temporarily in hotels or other short-term rental accommodations during the work week within the TWP area for the duration of their employment).

The maximum required construction workforce of 75 personnel required for the TWP would comprise 0.4 percent of the total construction workforce of the Bakersfield MSA (16,500 persons). Although the Community of Mojave and its immediate surroundings have low populations, large local construction workforces are generally available in the region because of the larger population centers of Bakersfield in Kern County, and of Lancaster and Palmdale in Los Angeles County. Local highways provide easy access to the site from throughout the region. Due to the distance of adjacent Los Angeles County and dense population centers within Kern County, few, if any, construction workers are expected to relocate permanently to the TWP area for a temporary construction job.

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. As discussed above, personnel for construction would be drawn from local Bakersfield MSA populations and regionally from Kern County, creating new temporary employment. A limited number of construction personnel would require temporary housing, likely in local hotels, and would purchase food, beverages, and other commodities, which would benefit the local economy.

No business uses occur in the immediate vicinity of the TWP site. Additionally, as short-term construction impacts 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.

Operation and Maintenance

Operation and maintenance of the Proposed Action would require up to 12 full-time and part-time skilled or semi-skilled workers to operate and maintain the Project.

Changes to Local Employment or Labor Force

As described above for construction impacts, the maximum required operations workforce of 12 personnel would comprise a minimal percentage of the Bakersfield MSA utilities workforce (refer to Table 3.13-3). Due to the distance of adjacent Los Angeles County and dense population centers within Kern County, few, if any, operations workers are expected to relocate to the area permanently. In the event any of the required 12 permanent workers do relocate from outside the TWP area, there are ample vacant housing units available (as shown in Table 3.13-2).

Changes in Revenue

No business uses occur in the immediate vicinity of the TWP site, and the TWP would not require the removal or relocation of any businesses. 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 Kern County, creating new employment in the county. This new employment would provide economic benefit to the local economy in terms of increased revenues.

Changes in Property Values

The California Public Utilities Commission (CPUC) and California Energy Commission (CEC) have expressed interest and concern regarding the potential impacts of electrical infrastructure projects on property value. Claims of diminished property value are based on reported concerns about hazards to human health and safety, and increased noise, traffic, and visual impacts associated with living in proximity to land uses such as power plants, freeways, high-voltage transmission lines, landfills, and hazardous waste sites.

A 2009 Ernest Orlando Lawrence Berkeley National Laboratory study, *The Impact of Wind Power Projects on Residential Property Values in the United States: A Multi-Site Hedonic Analysis*, by Hoen et al., collected data on approximately 7,500 sales of single-family homes situated within 10 miles of 24 existing wind facilities in nine different U.S. states (Hoen et al, 2009). Each of the homes in the analysis was visited by the researchers to determine the degree to which the wind facility was visible at the time of the home sale and to collect other pertinent data. The study authors applied a variety of models, conducted a sales analysis, and evaluated the possible impacts on sales volumes. While the analysis cannot dismiss the possibility that individual homes have been or could be negatively affected by proximity to wind facilities, the impacts were either too small or too infrequent to result in any widespread and consistent statistically observable effect. Based on the 2009 Hoen et al. report, no evidence is found that home prices in the vicinity of wind facilities are consistently, measurably, and substantially affected by the view of the wind facilities or the distance of the home to the facilities.

Similarly, numerous studies of other land uses, such as energy generation and transmission line projects, conclude that the potential for environmental concerns associated with 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. Studies indicate that other property-specific factors such as neighborhood features, square footage, size of lot, and irrigation potential are substantially more likely 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 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 TWP would affect private property values. However, because the conclusions of the Kinnard-Dickey paper (Kinnard Dickey, 1995), the Crocket analysis (CEC, 1992), and the Hoen et al. paper (Hoen et al, 2009) 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 wind-energy generating facility. 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

According to Section 2.4.8, Project Decommissioning, the TWP is expected to have a lifespan of 30 years. At any point during this time, temporary or permanent closure of the facility could occur. Temporary closure would be a result of necessary maintenance, hazardous weather conditions, or damage due to a natural disaster. Permanent closure would be a result of damage that is beyond repair, adverse economic conditions, or other significant reasons.

The Project Proponent will be required to submit to the BLM and Kern County a decommissioning plan prior to the Record of Decision that clearly establishes the action to be taken during decommissioning. A decommissioning plan will be implemented to ensure compliance with all applicable plans, regulations, and standards, and appropriate shutdown procedures. A decommissioning plan will be implemented to ensure compliance with applicable plans, regulations, and standards, removal of equipment and shutdown procedures, site restoration, and the costs and source of funds associated with decommissioning activities.

Short-term employment of decommissioning personnel would be beneficial to local businesses and the regional economy through increased expenditure of wages for goods and services. Personnel for decommissioning are assumed to come from local populations in Kern County, creating new temporary employment. A limited number of decommissioning personnel would require temporary housing, likely in local hotels, and would purchase food, beverages, and other commodities, which would provide economic benefit to the local economy in increased revenues.

The long-term economic and fiscal effects that closure and decommissioning activities would have on the study area would be speculative, because future conditions are unknown. Upon permanent closure of the TWP, the beneficial socioeconomic operational impacts such as worker payroll, Project expenditures, and local economic stimulus would no longer occur.

Alternative 2 - Modified Proposed Action (37 WTGs)

Alternative 2 reduces the size of the TWP by eliminating the western-most parcel from the Project. Construction spending and employment for Alternative 2 would be expected to be lower than for the Proposed Action and, consequently, the social and economic impacts would be similarly reduced in magnitude.

The operations spending and employment for Alternative 2 would be expected to be reduced from that for the Proposed Action and, consequently, the social and economic impacts would be similarly lesser in magnitude.

Decommissioning would have similar impacts to Alternative 1. Short-term employment of decommissioning personnel would be beneficial to local businesses and the regional economy through increased expenditure of wages for goods and services. Personnel for decommissioning are assumed to come from local populations in Kern County, creating new temporary employment. A limited number of decommissioning personnel would require temporary housing, likely in local hotels, and would purchase food, beverages, and other commodities, which would provide economic benefit to the local economy in increased revenues.

The long-term economic and fiscal effects that closure and decommissioning activities would have on the study area would be speculative, because future conditions are unknown. Upon permanent closure of the TWP, the beneficial socioeconomic operational impacts such as worker payroll, Project expenditures, and local economic stimulus would no longer occur.

Alternative 3 - No Action Alternative

Under this alternative, the BLM would not approve the TWP and would not amend the CDCA Plan. As a result, no wind energy project would be constructed, and the BLM would continue to manage the site lands under their jurisdiction consistent with the existing land use designation in the CDCA Plan (as amended). No action would occur and existing conditions relevant to socioeconomics would continue. The land on which the TWP is proposed would become available to other uses that are consistent with the BLM's CDCA Plan, including another renewable energy project.

Alternative 4 - No Project; Unsuitable

Under this alternative, the BLM would not approve the TWP and would amend the CDCA Plan to make the site unavailable for future wind energy development. As a result, no wind energy project would be constructed on the site, and the BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended. No action would occur and no future development of the BLM portion of the Project site for wind energy would occur. Existing conditions relevant to socioeconomics would continue.

Alternative 5 - No Project; Suitable

Under this alternative, the BLM would not approve the TWP and would amend the CDCA Plan to allow for other wind projects on the site in the future. As a result, it is possible that another wind energy project could be constructed on the site. No impacts associated with the TWP would occur. In the future, if another wind development project is implemented, similar impacts to socioeconomics as those described for the Proposed Action could occur.

4.13.3 Cumulative Impacts

Cumulative socioeconomic impacts resulting from the TWP would occur if similar impacts of other projects located within the geographic extent of this analysis were to occur in the same area

and during the same time period as those impacts of the Proposed Action, including during the construction, operation and maintenance, and decommissioning phases.

Geographic Extent/Context

As described above and in Section 3.13, the socioeconomic effects of the TWP would occur in Kern County, particularly within the Bakersfield MSA. Additionally, as any socioeconomic impacts generated by the TWP would be limited to occurring within the lifespan of the Project, cumulative socioeconomic impacts would also occur only during the lifespan of the Project.

Existing Cumulative Conditions

Past development and population growth within the TWP area have affected the population size and composition, settlement patterns, housing demand, business revenues and conflicts, as well as property values throughout the local area and region. Population increases have both an indirect and direct influence on development – e.g., housing demand increases and the workforce expands. In addition, continued development creates more infrastructure affecting business operations, revenues, and property values. Section 3.13, Social Economics, describes existing socioeconomic conditions within a local and regional study area of the Project, including demographics, housing characteristics, and labor characteristics, which have developed as a result of the past and present projects that comprise existing cumulative conditions.

Past and existing development of the local and regional study areas contribute to the cumulative impact of the TWP and alternatives. These types of past and existing projects, together with reasonably foreseeable projects described below, could combine with impacts of the TWP or an alternative to affect socioeconomics within the geographic extent of this cumulative analysis. The following are the existing wind energy systems, as presented in Table 4.1-1 (Section 4.1).

Reasonably Foreseeable Projects

Table 4.13-1 provides a listing of current and reasonably foreseeable projects, including other proposed or approved renewable energy projects, projects located on BLM lands, proposed or approved projects within the County's jurisdiction, and other actions/activities that the Lead

Agencies consider reasonably foreseeable. Many of the projects presented in Table 4.1-2 and considered part of the baseline conditions 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 TWP were considered in the cumulative impacts analyses in this EIS.

TABLE 4.13-1
CUMULATIVE PROJECT LABOR NEEDS

Project	Construction Labor Need	Operational Labor Need
Tylerhorse Wind Project	**75**	**12**
Alta East Wind Energy Project	262	15
Tehachapi Renewable Transmission Project Segments 4-11 (SCE)	100-300	0
Pacific Wind Energy Project (enXco)	100-300	8-12
Alta Infill Wind Project	230	30
Catalina Renewable Energy Project (enXco)	250	16-24
Lower West Wind Energy Project	25	2
Morgan Hills Wind Energy Project	262	10
North Sky River Wind Energy Project and Jawbone Wind Energy Project	120-150	32
Antelope Valley Solar Project	30	N/A
Total	*1,884*[a]	*137*

[a] Represents total using maximum number where a range of labor need was provided.

SOURCE: Kern County, 2011; CPUC, 2011.

The Tables 4.1-2 and 4.13-1 provide a summary of projects and labor needs (as provided by each projects environmental document) which characterize the reasonably foreseeable projects affecting socioeconomic conditions based on potential overlapping of construction schedule with the TWP, projects where needs for large labor force and potential increases in local population (both temporary and permanent) would be required, and projects where data on workforce was available.

Some possible cumulative effects include: increased temporary employment during construction, increased permanent employment during operation and maintenance, altered business revenues, or alteration of property values.

While Kern County continues to increase in population, requiring additional housing, public services, and utilities, the TWP area is both characterized by plans for rapid expansion of renewable energy projects and the accompanying infrastructure necessary to execute these projects.

Construction, Operation and Maintenance, Decommissioning

Construction

Construction of the TWP could utilize the same workforce as the projects listed above in Table 4.13-1, as well as many of the additional projects listed in Table 4.1-2. Impacts associated with construction activities would be cumulatively considerable if they would have the potential to combine with similar impacts of other past, present, or reasonably foreseeable projects. The

potential for socioeconomic impacts of TWP construction to combine with the effects of other projects within the geographic scope of this cumulative analysis is described below.

Changes to Local Employment or Labor Force

The TWP would draw on the same labor force as many of the other projects listed in Table 4.1-2, specifically the renewable energy projects (due to similar construction skill set), and construction would likely occur at the same time as some of the other projects. As shown in Table 4.13-1, the combined construction demands of a number of known overlapping projects and the TWP would require a maximum of approximately 1,884 workers if the peak construction periods for each project coincided. As shown in Table 3.13-3, the Bakersfield MSA and Kern County contain a large construction workforce in proportion to cumulative labor force requirements and would comprise a small portion of the available construction workforce of the local Bakersfield MSA (16,500 persons). Additionally, many projects identified in Table 4.1-2 are located in northern Los Angeles County, which would increase the amount of available workers in the cumulative project area. From a broader geographic and labor force perspective, no substantial shortages of adequately skilled construction workers are anticipated.

A cumulative influx in construction labor to the local area could create demand for temporary housing that is greater than the existing supply of temporary lodging. There are a number of suitable and available temporary lodging at local hotel/motel lodging and private and public RV/campgrounds are also available for local accommodations. There would be more than sufficient temporary housing for construction workers seeking temporary housing under a worst-case scenario.

In summary, there is potential for short-term cumulative social and economic impacts in the area associated with the demand for skilled construction labor (particularly for the solar, wind, and geothermal projects within Kern County). While there may be increased demand for temporary local housing from construction workers -4 percent of the total possible number of construction workers- seeking to commute weekly to the local area, given the estimated availability of lodging, it is expected that there will adequate and suitable housing to meet any future construction worker temporary housing demand. Therefore, no major adverse cumulative impacts would be expected to result related to employment, labor, and housing.

Changes in Revenue

Because the TWP would not result in any long-term changes or impacts to agriculture, business uses, or cause any mineral extraction disruptions, and would not require the removal or relocation of any business uses, the TWP would not contribute to any cumulative adverse impacts to business revenues. The new temporary employment and purchase of local materials, food, beverages, and other commodities, would combine with cumulative projects identified in Table 4.1-2 toward cumulative economic benefits to the local economy.

Operation and Maintenance

Operation and maintenance of the TWP would require a similar workforce to many of the other projects listed in Table 4.1-2, particularly those in the utilities trades.

Changes to Local Employment or Labor Force

As shown in Table 4.13-1, the combined operational demands of a number of known overlapping projects and the TWP would require a maximum of approximately 137 operational workers. As shown in Table 3.13-3, the Bakersfield MSA and Kern County contain a large utilities based workforce in proportion to cumulative labor force requirements. Additionally, a number of projects identified in Table 4.1-2 are located in northern Los Angeles County, and are expected to be close enough to the Los Angeles metropolitan area to draw upon the large labor force of that area. This suggests that there is likely to be a considerable additional potential labor force available that could be willing to commute to the local area. Consequently, from a broader geographic and labor force perspective, no substantial shortages of adequately skilled operational workers with a utilities based skill set are anticipated.

However, some workers are expected to relocate to the local and regional areas permanently for operation. If any permanent workers do relocate from outside the TWP area, ample vacant housing units are available (as shown in Table 3.13-2). Due to the availability of housing to any relocating employees, the TWP contribution to any cumulative impacts on local employment or labor force would not be considerable.

Changes in Revenue

As with construction, employment of operation and maintenance personnel, both for the TWP and other surrounding planned projects, would be beneficial to local businesses and the regional economy through increased expenditure of wages for goods and services and through new employment created in the region. The new employment and purchase of local materials, food, beverages, and other commodities, would contribute with other projects toward cumulative economic benefits to the local economy.

Changes in Property Values

Due to the TWP's remote location and distance from most other projects listed in Table 4.1-1, Cumulative Projects, the TWP would not combine with another project to affect property values. Only the Alta Infill Project and the Alta East Wind Project are considered to be close enough to the TWP to affect the residential properties within the vicinity of those projects. Impacts of the TWP could potentially combine with the Alta East Wind Project and the Alta Infill Project to affect property values; however, as described above for the Proposed Action, 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. As such, the TWP's contribution to any cumulative property value impacts with the cumulative projects identified in Table 4.1-2 is considered minimal and would not be considerable.

Decommissioning

Upon permanent closure of the TWP, it is unknown what the potential cumulative contribution of the Project to socioeconomic impacts could occur as the number and proximity of cumulative projects in 30 years (expected life of the Project) is unknown. It is assumed that the analysis of cumulative construction impacts discussed above could occur during decommissioning. Upon permanent closure of the TWP, the beneficial socioeconomic contributions to the cumulative economic conditions of the region would no longer occur.

4.13.4 Mitigation Measures

SOC-1: Workers Plan. As required by the Kern County Board of Supervisors, the Project Applicant will work with County staff to determine how the receipt of sales and use taxes related to the construction of the Project will be maximized. This process shall include, but is not necessarily limited to the Project Operator: obtaining a street address within the unincorporated portion of Kern County for acquisition, purchasing and billing purposes, registering this address with the State Board of Equalization, using this address for acquisition, purchasing and billing purposes associated with the proposed Project. The Project Operator shall allow the County to use this sales tax information publicly for reporting purposes.

The Project operator shall encourage all contractors of the Project to hire at least 25 percent of their workers from the local Kern County communities. The Applicant shall provide the contractors a list of training programs that provide skilled wind workers and shall require the contractor to advertise locally for available jobs, notify the training programs of job availability, all in conjunction with normal hiring practices of the con-tractor. The Applicant shall submit a letter detailing the hiring efforts prior to commencement of construction.

4.13.5 Residual Impacts after Mitigation

All adverse impacts on socioeconomics resulting from construction, operation and maintenance, or decommissioning of the TWP would be avoided or substantially reduced.

4.14 Impacts on Soils Resources

4.14.1 Methodology for analysis

This section describes effects on geology and soils that would be caused by implementation of the TWP and alternatives. The following discussion addresses potential environmental impacts to soil resources associated with implementation of the TWP and recommends measures to reduce or avoid adverse impacts anticipated from construction, operation, and decommissioning of the TWP and alternatives. A discussion of cumulative impacts related to geology and soil resources is also included in this section. This analysis first established baseline conditions for the environmental setting relevant to geology and soil resources, presented in Section 3.14 of this DEIS/PA.

4.14.2 Discussion of Direct and Indirect Impacts

Alternative 1 - Proposed Action (40 WTGs)

Construction

Construction activities that could potentially affect soil resources would include excavation, grading, trenching, and soil compaction to prepare the existing site for installation of the TWP components. If necessary, blasting activities may also occur during the construction period, particularly as related to excavations required for WTG foundations, which could also potentially disturb existing soils. TWP facilities would consist of WTGs, an electrical collection system for collecting the power generated by each WTG, and access roads. The impacts on soil resources associated with construction of the TWP are described below.

Soil Erosion and Loss of Topsoil

Soil-disturbing activities that would occur during construction of the TWP, including excavation and grading, would have the potential to result in erosion and loss of topsoil either from the effects of wind or water. If blasting is required during excavations, such activities would also contribute to soil disturbance and could facilitate the occurrence of erosion and loss of topsoil. Temporary land disturbance related to construction of the TWP is estimated at approximately 171 acres, which is approximately 14 percent of the proposed ROW area. Erosion control features and best management practices (BMPs) included in the Proposed Action's federally required Stormwater Pollution Prevention Plan (SWPPP) would minimize or prevent disturbed and/or exposed materials from mobilizing in such a way that soil erosion or loss of topsoil could occur. Erosion-minimizing efforts such as straw wattles, water bars, covers, silt fences, and sensitive area access restrictions installed before clearing and grading begins and mulching, seeding, or other suitable stabilization measures installed after construction begins would protect exposed areas during construction activities. Please see Water Resources, Section 4.19, for additional discussion of the Project's SWPPP and construction-related erosion impacts.

Erosion and loss of topsoil would be minimized during construction through implementation of soil-related BMPs identified by the BLM and listed below in Section 4.14.4. In addition, implementation of Mitigation Measures WA-8 and WA-9 would ensure that Project structures would be designed, engineered, constructed, and maintained to avoid potential damage associated with erosion, and also ensure that the SWPPP developed and implemented for the TWP would include specific BMPs to minimize exposure to the effects of wind and water, thus minimizing potential adverse impacts associated with erosion and loss of topsoil. Therefore, impacts associated with soil erosion and loss of topsoil during Project construction would be avoided or substantially reduced.

Operation and Maintenance

Operation and maintenance activities that would affect soil resources include grading and gravel application to maintain access roads throughout the site. Grading activities could lead to erosion and loss of topsoil. However, the topography of the Project site and the low average annual precipitation for the area would reduce the likelihood of erosion and loss of topsoil related to routine access road maintenance. Re-grading and re-graveling of access roads for routine maintenance would not alter the drainage patterns on-site, and would not lead to a substantial increase in erosion or loss of topsoil. It is anticipated that any increase in surface water runoff resulting from permanent project features would be location-specific, and that such effects would not influence surface runoff in a manner which would result in erosion or loss of topsoil. Other potential geologic hazards are discussed below.

Unstable Geologic Units

As described in Section 3.14.1, the Project area is considered to have low potential for liquefaction, lateral spreading, hydrocompaction, and subsidence. The probability of dynamic compaction is also considered low for the majority of the Project area where the older alluvium is located. The only exception being the younger alluvial deposits especially the looser soils found in the recent drainages that would possibly have a greater potential for seismically induced settlement. However, the proposed facilities would not be located in these drainage areas for various other reasons including flood protection and habitat protection. In addition, major improvements would be designed to withstand any strong ground motion of a Design Basis Earthquake (DBE), as defined by the 2010 CBC, which would include site preparation such as compaction of site soils to accommodate any new loadings and minimize dynamic compaction.

Implementation of Mitigation Measure SO-1, presented below in Section 4.14.4, would reduce impacts related to any potential unstable geologic units including the effects of dynamic compaction. Mitigation Measure SO-1 requires that design-level geotechnical studies be performed by the Applicant and would include detailed characterization of sub-surface conditions, including identification of any potentially geotechnical hazards, as well as proposed solutions regarding how any identified hazards should be reduced or avoided. If potentially unstable soils are encountered during Project construction, appropriate design features, including excavation of potentially expansive or collapsible soils during construction and replacement with

engineered backfill, and ground-treatment processes in accordance with building code standards would avoid impacts related to unstable soils.

Expansive Soils

Section 3.14 describes that subsurface conditions at the TWP site and in the vicinity are not considered to be expansive. If permanent project infrastructure were sited on expansive soils, the soil characteristics could result in destabilization of the infrastructure, and possibly in subsequent hazards to the stability of infrastructure in the immediate vicinity. Site specific geotechnical investigations would be required to ensure that construction of the TWP would not locate infrastructure on expansive soil, and would not create associated substantial risks to life or property.

Implementation of Mitigation Measure SO-1, presented below in Section 4.14.4, would reduce impacts related to expansive soils. Mitigation Measure SO-1 requires that design-level geotechnical studies to be performed by the Applicant shall include detailed characterization of sub-surface conditions, including identification of any potentially expansive properties, as well as proposed solutions regarding how any identified subsurface hazards should be reduced or avoided.

Seismic Ground Shaking

The TWP site is located in a seismically active region where a significant seismic event could cause significant ground shaking at the site. The severity of seismic ground shaking is determined by a variety of factors such as the size of the event, distance to the epicenter, and the engineering qualities of the underlying materials. For the TWP site, the design earthquake which has a two percent chance of being exceeded over 50 years is estimated to be 0.4g (Kleinfelder, 2011). Ground shaking of this magnitude could result in significant damage if improvements are not designed appropriately. As stated above, the proposed improvements would receive design-level geotechnical evaluations which would address potential shaking at the site and any necessary site preparations such as compaction and foundation design in accordance with the Kern County building code and the Kern County Safety Element.

Landslides

The majority of the TWP site is relatively flat although some local drainages have slopes associated with their channel banks. The channel banks are not very high (5 to 8 feet in some areas), but are locally steep enough to potentially experience slope failure from earthquake-induced ground shaking (Kleinfelder, 2011). Siting the proposed project improvements as recommended in the site-specific geotechnical investigation and grading recommendations would mitigate the potential for landslides or slope instability. Implementation of Mitigation Measure SO-1 would include measures such as setbacks from channel banks to ensure that potential landslide hazards are minimized.

Decommissioning

Decommissioning of the Project would include removal of the wind turbines, cables, and other infrastructure support facilities. The foundations would be removed to a depth determined by local, State, and federal regulations; removal of access roads and restoration of disturbed lands would be in accordance with regulations and/or landowners' contractual commitments. Design features and best management practices included by the Applicant as part of the Project and intended to avoid and minimize environmental impacts are considered part of the Project description. Prior to the termination of the ROW authorization, a decommissioning plan would be developed and approved by the BLM, and would include a site reclamation plan and monitoring program. It is anticipated that the BMPs and stipulations developed for construction activities would be applied to similar activities during the decommissioning phase, including as related to the protection of soil resources from potentially adverse impacts. Additionally, during decommissioning of the Project, topsoil from all decommissioning activities would be salvaged and reapplied during final reclamation, and disturbed areas would be reclaimed with vegetation. These erosion control measures would avoid and/or minimize potential adverse effects associated with soil disturbance. Earth-disturbing activities that would occur during the decommissioning phase could result in soil erosion and/or loss of topsoil, similar to the effects of earth-disturbing activities that would occur during the construction phase, but these effects would be minimized through implementation of the aforementioned BMPs and the decommissioning plan and impacts would be avoided or substantially reduced.

Alternative 2 - Modified Proposed Action (37 WTGs)

Alternative 2 is conceptually similar to the Proposed Action (Alternative 1), only the southwest 94-acre parcel would be eliminated from project. Therefore, the overall disturbance to onsite soils would be reduced compared to Alternative 1, but Alternative 2 would not otherwise alter the ground-disturbing activities required during construction that could result in impacts associated with soil erosion and loss of topsoil, unstable geologic units, expansive soils, ground shaking, or landslides. Similar to Alternative 1, construction, operation and maintenance, and decommissioning activities would implement BMPs during earth-disturbing activities to minimize potential impacts. Facilities would similarly be designed to withstand anticipated ground shaking and any other seismically induced potential hazards in accordance with building code requirements.

Alternative 3 - No Action Alternative

Under Alternative 3, no action would occur and existing conditions relevant to soil resources would continue. No impact would occur and the area would continue to be managed in accordance with the CDCA Plan.

Alternative 4 - No Project; Unsuitable

Under Alternative 4, no action would occur and the CDCA Plan would be amended to preclude future development of the site for wind energy. Existing conditions relevant to soil resources would continue. No impacts associated with the TWP or an alternative would occur.

Alternative 5 - No Project; Suitable

Under Alternative 5, no action would occur and the CDCA Plan would be amended to allow for wind energy development on the site in the future. No impacts associated with the TWP or an alternative would occur. In the future, if another wind development project is implemented, similar impacts to soil resources as those described for the TWP could occur.

4.14.3 Cumulative Impacts

Geographic Extent/Context

The geographic extent for analysis of cumulative impacts related to soil resources is the TWP site itself, and access roads to and from the site that would be used during construction, operation and maintenance, and decommissioning of the project. Any potential impacts to soil resources related to construction, operation and maintenance, and decommissioning of the project would be site-specific and would only occur within the site boundary or along access roads; off-site soil resources would not be affected.

Existing Cumulative Conditions

Past or present projects that contribute to existing cumulative conditions in the Project area, as relevant to soil resources, are limited to the MWEP to the north. This project is currently under construction and may have caused impacts to soil resources that were similar to impacts of the TWP; however, the MWEP does not result in any ongoing impacts to soil resources and would not combine with impacts of the TWP to result in cumulative effects.

Reasonably Foreseeable Projects

Table 4.1-1 provides a list of current and 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 reasonably foreseeable. Table 4.1-2 identifies the cumulative projects identified within the geographic extent for cumulative impacts affecting soil resources. The reasonably foreseeable projects listed in Table 4.1-2 could potentially result in similar impacts to soil resources as the TWP, if construction occurs at the same time and with use of the same access roads as the TWP.

Construction, Operation and Maintenance, Decommissioning

In general, no unavoidable adverse impacts to soil resources related to construction or decommissioning of the TWP or an alternative would occur after implementation of BMPs and mitigation measures. The geographic extent of cumulative analysis for soils is limited to the Project site. This is because geologic materials, minerals, and soils occur at specific locales and are unaffected by activities not acting on them directly and any impacts of the Project would be site-specific. The potential for this impact to combine with similar effects of other projects would only occur if other projects were implemented in the same area at the same time as the TWP. However, construction of the TWP would preclude other projects from being implemented concurrently in the same location. Furthermore BMPs and mitigation measures would be implemented to reduce or prevent impacts during construction. Therefore impacts related to construction of the TWP would not have the potential to combine with similar effects from other projects and would not be cumulatively considerable.

4.14.4 Mitigation Measures

The TWP and alternatives would include implementation of recommended BMPs from BLM's Programmatic EIS for Wind Energy Development on BLM-Administered Lands in the Western United States (BLM, 2005). The BLM BMPs are presented below.

BLM Best Management Practices

1. The size of disturbed land should be minimized as much as possible. Existing roads and borrow pits should be used as much as possible.

2. Topsoil removed during construction should be salvaged and reapplied during reclamation. Disturbed soils should be reclaimed as quickly as possible or protective covers should be applied.

3. Erosion controls that comply with county, state, and federal standards should be applied. Practices such as jute netting, silt fences, and check dams should be applied near disturbed areas.

4. On-site surface runoff control features should be designed to minimize the potential for increased localized soil erosion. Drainage ditches should be constructed where necessary but held to a minimum. Potential soil erosion should be controlled at culvert outlets with appropriate structures. Catch basins, drainage ditches, and culverts should be cleaned and maintained regularly.

5. Operators should identify unstable slopes and local factors that can induce slope instability (such as groundwater conditions, precipitation, earthquake activities, slope angles, and dip angles of geologic strata). Operators also should avoid creating excessive slopes during excavation and blasting operations. Special construction techniques should be used where applicable in areas of steep slopes, erodible soil, and stream channel/wash crossings.

6. Borrow material should be obtained only from authorized and permitted sites.

7. Access roads should be located to follow natural contours of the topography and minimize side hill cuts.

8. Foundations and trenches should be backfilled with originally excavated materials as much as possible. Excavation material should be disposed of only in approved areas to control soil erosion and to minimize leaching of hazardous constituents. If suitable, excess excavation materials may be stockpiled for use in reclamation activities.

9. Existing drainage systems should not be altered, especially in sensitive areas such as erodible soils or steep slopes. When constructing stream or wash crossings, culverts or water conveyances for temporary and permanent roads should be designed to accommodate the runoff of a 10-year storm. Potential soil erosion should be controlled at culvert outlets with appropriate structures. Catch basins, roadway ditches, and culverts should be cleaned and maintained regularly.

In addition to the BLM BMPs listed above, project-specific mitigation measures have been developed to reduce and/or avoid potential soil resources impacts associated with construction of the TWP or an alternative. These project-specific mitigation measures are presented below.

SO-1: Conduct Site Specific Design-Level Geotechnical Studies to Determine Appropriate Foundation Design. The design-level geotechnical studies to be performed by the Project Applicant shall identify the presence, if any, of potentially detrimental soil chemicals, such as chlorides and sulfates. Appropriate design measures for protection of reinforcement, concrete, and metal-structural components against corrosion shall be utilized, such as use of corrosion-resistant materials and coatings, increased thickness of Project components exposed to potentially corrosive conditions, and use of passive and/or active cathodic protection systems. The geotechnical studies shall also identify areas with potentially expansive or collapsible soils and include appropriate design features, including excavation of potentially expansive or collapsible soils during construction and replacement with engineered backfill, ground-treatment processes, and redirection of surface water and drainage away from expansive foundation soils. Studies shall conform to industry standards of care and American Society for Testing and Materials (ASTM) standards for field and laboratory testing. Study results and proposed solutions shall be provided for review and approval to the BLM, for actions on BLM lands, and to Kern County, for actions on County lands, at least 60 days before final Project design.

WATER-1: Flood and Erosion Structure Damage Protection. The full text of this measure is presented in Section 4.19.

WATER-4: Construction SWPPP Specifications. The full text of this measure is presented in Section 4.19.

4.14.5 Residual Impacts after Mitigation Measures were Implemented

Following implementation of BMPs and mitigation measures provided in Section 4.14.4, all adverse impacts on soil resources resulting from construction, operation and maintenance, and decommissioning of the TWP or an alternative would be avoided or substantially reduced. There would be no adverse unavoidable impacts on soil resources that remain.

4.15 Special Designations

This Section analyzes whether the TWP and alternatives would conflict with the management goals of any areas subject to special designations, such as impacts during construction from noise, fugitive dust, and lighting.

4.15.1 Impact Assessment Methodology

The analysis of the effects of the TWP and alternatives must comply with NEPA requirements given the BLM jurisdiction related to the TWP. This analysis focuses on whether the TWP would conflict with the management goals of any applicable special designations, or result in environmental impacts. The analysis reviews the Project in relationship to the specific legislation and guidance which are required in the designation and management of Special Designations. These are: FLPMA, CDCA, Northern and Eastern Colorado Desert Coordinated Management Plan (NECO), the Wilderness Act of 1964, and the National Back Country Byways Program.

4.15.2 Discussion of Direct and Indirect Impacts

The BLM has determined that temporary effects associated with fugitive dust and noise during TWP construction, and the visual disturbance associated with Project construction and operation would not affect the status of any special designated areas within proximity to the TWP. The only special designation area that may be impacted by the TWP is the section of the PCT that runs adjacent to the eastern part of the Project that is located on the southern half of Section 28, Township 10 North, Range 15 West. The next closest area with a special designation is the Horse Canyon ACEC, which is 14 miles from the site and would not be affected by the Project.

Alternative 1 - Proposed Action (40 WTGs)

Construction

The Proposed Action would have no direct effects on special designations during construction, since the site is not subject to any such designations, and no new designations or amendments to existing designations are proposed. As previously stated, the PCT runs adjacent to the eastern side of the TWP site that is located on the southern half of Section 28, Township 10 North, Range 15 West. Therefore, users of the PCT may be affected by fugitive dust and noise during construction. The prevailing wind direction towards the east and northeast may also heighten the impact to users of the PCT. The fugitive dust would impact air quality in the vicinity of the Project site, but would not have the potential to impact any of the special designations beyond the PCT. Construction noise impacts would be caused by equipment required for construction, motor vehicle use, voices, music, or other worker-related sounds that could disturb the peaceful and serene environment enjoyed by users of the PCT. Additionally, the character and quality of view experienced by users would be disturbed by the introduction of several industrial structures including construction equipment, wind turbines, and meteorological towers. See Section 4.2, Air Quality for Project related air quality impacts and Section 4.9, Noise for project related noise impacts. In regard to the PCT, due to the prevailing wind direction towards the east and

northeast, users of the PCT would experience heightened temporary dust pollutants during strong winds. Separate and apart from the PCT, the nearest of these specially-designated lands is the Horse Canyon ACEC which is located approximately 14 miles away and is not expected to be affected by the Proposed Action.

Operation and Maintenance

As noted above, the TWP would be located within the vicinity of the PCT. There would be permanent visual impacts from the WTGs and the transmission infrastructure. Additionally, nighttime lighting from the WTGs would introduce a new source of light to the area and disturb the character and quality of view experienced by PCT users. After the PCT the next nearest special designation is the Horse Canyon ACEC, which is 14 miles from the TWP. At that distance, the visual impacts of the TWP are not expected to be significant. See Chapter 4.18, Visual Resources for a detailed discussion of visual impacts related to the TWP. Since the only special designation area within the vicinity of the Project site is the PCT, users of any other surrounding special designation areas would not experience visual impacts created by the TWP site.

Decommissioning

Similar to construction, decommissioning activities would cause temporary disturbance to users of the PCT. Fugitive dust during decommissioning activities could impact the air quality experienced by users of the PCT as well as the introduction of noise caused by equipment required for decommissioning, motor vehicle use, voices, music, or other worker-related sounds that could disturb the peaceful and serene environment enjoyed by users. The dismantling of WTGs would disturb the character and quality of view experienced by users within the vicinity of the site. As previously stated, the PCT is the only special designation area within the vicinity of the project site with the potential to be impacted by the TWP, with the next closest being the Horse Canyon, which is 14 miles away. Therefore, no other special designation areas would be impacted by the decommissioning of the site beyond the PCT. After the TWP has been decommissioned, users would experience a beneficial impact, as the permanent visual impacts, described for operation and maintenance above would be removed. Although revegetation in the desert is difficult and generally of limited success, after decommissioning, the site would return to a more natural and undeveloped state (see section 4.17 Vegetation Resources).

Alternative 2 - Modified Proposed Action (37 WTGs)

In comparison to the Proposed Action, Alternative 2 would consist of the construction of 37 WTGs which is three WTGs less than the Proposed Action. Alternative 2 would eliminate all WTGs that would be built on the southern half of Section 28, T 10 N R 15 W which is the portion of the TWP site that is adjacent to the PCT. Therefore, Alternative 2 would have impacts related to construction, operation and maintenance and decommissioning that are similar to, but slightly less than those described for the Proposed Action as there would be fewer WTGs for Alternative 2. In particular, impacts to the PCT from dust, noise and visual resources would remain but

would be generated a distance of approximately 1 mile from the trail as compared to immediately adjacent to the trail under the Proposed Action.

Alternative 3 - No Action Alternative

Under this alternative, the BLM would not approve the TWP and would not amend the CDCA Plan. As a result, no impacts associated with the TWP would occur, and the BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan, as amended.

Alternative 4 - No Project; Unsuitable

Under this alternative, the BLM would not approve the TWP and would amend the CDCA Plan to make the site unavailable for future wind energy development. As a result, no impacts associated with the TWP would occur, and the BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan, as amended.

Alternative 5 - No Project; Suitable

Under this alternative, the BLM would not approve the TWP and would amend the CDCA Plan to allow for other wind projects on the site in the future. As a result, it is possible that another wind energy project could be constructed on the site. As a result, impacts on special designation areas, such as the PCT, could result from the construction and operation of such a future wind project similar to the impacts associated with the TWP.

4.15.3 Cumulative Impacts

Geographic Extent/Context

The geographic scope of the cumulative effects analysis for general recreation on public lands includes the area in the vicinity of the proposed TWP site, an approximate 40-mile radius, encompassing Horse Canyon and Middle Knob ACEC, which are located 14 and 15 miles northeast, respectively; Jawbone/Butterbredt ACEC, which is located 27 miles northeast; Desert Tortoise Natural Area, which is located 30 miles northeast; and Freemont-Kramer DWMA, which is located 30 miles northeast and 36 miles southeast. Due to the presence of these specially designated areas within the general vicinity of the site and the TWP's potential contribution to cumulative impacts on these areas, the geographic extent of analysis is a 40-mile radius from the TWP site. Locations most likely to be affected within special designation areas would be included within this 14-mile radius. Beyond this 14-mile radius, potential impacts associated with fugitive dust, noise, and visual disturbance would be greatly reduced. Potential cumulative impacts could occur for the entire duration of the TWP, from the initiation of construction to the conclusion of facility decommissioning.

Existing Cumulative Conditions

The TWP site and surrounding specially designated areas, particularly the PCT, consist of some open space land, scattered rural residences, wind energy development, and the unincorporated Communities of Mojave and Rosamond. Past and ongoing development throughout these areas has resulted in alterations to the natural landscape, as well as impacts associated with air quality, noise, and visual resources on special designation areas. As discussed in Sections 4.2 (Air Resources) and 4.9 (Noise), temporary impacts from Air Quality and Noise have been and continue to be reduced through Best Management Practices (BMPs) and Project specific mitigation measures. However, as discussed in Section 4.18 (Visual Resources), permanent impacts to visual resources to special designated areas remain, particularly due to the prevalence of wind energy development in the area.

Reasonably Foreseeable Projects

A wide variety of reasonably foreseeable development projects could contribute to the cumulative conditions for special designations in regards to effects from air quality, noise and visual resources in the cumulative analysis area. Table 4.1-1 lists cumulative projects in the vicinity of the TWP site. Consideration of the projects identified in Table 4.1-1 and shown on Figure 4.1-1 was used to develop this analysis of cumulative effects for special designations. These projects were selected based on the distance of where impacts from air quality, noise and visual resources would be experienced from the special designated areas. Several types of development projects could contribute to the cumulative impact of the TWP and alternatives, including housing development projects, commercial and industrial development, and renewable energy projects. These types of reasonably foreseeable projects could combine with potential impacts of the TWP or an alternative to affect special designations within the geographic extent of this cumulative analysis.

Construction, Operation and Maintenance, Decommissioning

Numerous energy-related development projects, including the TWP, would adversely affect the viewscape by adding temporary air quality emissions during construction; temporary and permanent structures, fences, and other features that could interrupt landscape views; and increased noise caused by equipment required for construction and decommissioning, motor vehicle use, voices, music, or other worker-related sounds. Any of these activities individually or in combination could cause some users to seek other areas of the desert for their wilderness or recreation activities and experiences. These locations would most likely be in another county where renewable energy development is not prevalent or likely to occur.

Over 40 renewable energy projects are identified within the cumulative project list (Section 4, Table 4.1-1). These projects are located within the general vicinity of the TWP and would present similar effects to the special designation areas. The PCT is adjacent the eastern edge of the western-most parcel of the TWP, and as this trail continues through the County, it passes other renewable energy projects, therefore different portions of the PCT would sustain varying levels of impacts from the cumulative projects.

Unavoidable impacts to designated ACECs in the cumulative area would occur from the construction and operation of the cumulative projects which would alter the landscape from an undeveloped state to a more industrial setting, as viewed from the special designation areas. These impacts would last until the Projects' facilities are decommissioned and dismantled and the vegetation and landforms at the various project sites are reclaimed to the extent they can be.

Potential impacts are discussed in the Air Quality, Noise, and Visual Resources sections of this Draft EIS, and BMPs and TWP specific mitigation measures for construction, operations, and maintenance activities have been proposed to reduce the impacts of the TWP. Furthermore, cumulative effects associated with fugitive dust, noise, and visual disturbance would not change the designations or status of the PCT or any other special designation areas in proximity to the TWP. Thus, the TWP and other reasonably foreseeable future project would not contribute substantially to cumulative impacts on special designations.

4.15.4 Mitigation Measures

The following mitigation measures would be imposed by the BLM to avoid or reduce impacts on the quality of the human environment. The following mitigation measures would avoid or minimize impacts on special designations:

SD-1: Land acquisition along the PCT. The project Applicant shall provide funds for acquisition of land along the PCT corridor. Funds will be used by the project Applicant, or transferred to the BLM or a third party, to acquire property of equal value along the trail corridor. Priority will be given to acquisition within the southern Sierra Nevada/Tehachapi portion of the trail. If properties are not available for acquisition, funds may be used for restoration projects of equal value along the trail corridor that will improve visual integrity. The project Applicant shall provide funds for acquisition within one year of issuance of the Notice to Proceed from the BLM.

Land acquisition is based on the concepts developed in the Draft Pacific Crest National Scenic Trail Best Management Practices to Mitigate Scenery Impacts from Conflicting Land Uses (USFS, 2012). Under these Best Management Practices, the mitigation ratio for land acquisition is calculated by using the distance of the project from the PCT, the distance along the trail that the project is visible to trail users, and the contrast created by the project to the characteristic scenery. Under the preferred alternative, the project creates a moderate to high contrast to the characteristic scenery.

4.15.5 Residual Impacts after Mitigation

Even with adherence to the mitigation measures, impacts to special designations, particularly visual impacts to the PCT would remain. As seen in simulations, the size and shape of the WTGs produce a visual contrast in the landscape that cannot be fully eliminated (See Figures 4.18-1 through 4.18-3). Under the Proposed Action, 1,207 acres of land managed by the BLM would be visible from KOP 3. Of the total visible acreage, new structures (wind turbines) would be introduced on the entire area. The area of impacted viewshed would extend well beyond the project footprint.

4.16 Transportation and Public Access – Off Highway Vehicle

4.16.1 Methodology for Analysis

Public Access

The Conservation Desert Conservation Area (CDCA) and West Mojave (WEMO) Plans, which include detailed inventories and designation of open routes in the vicinity of the TWP site, were reviewed to determine impacts to open routes (BLM 1980; BLM, 2002; BLM, 2003; BLM, 2005). The information presented in this section is based on the *Tylerhorse Wind Energy Project Traffic Study,* December 29, 2011, prepared by Ruettgers & Schuler.

Transportation

This analysis focuses on potential impacts related to the construction, operation, maintenance, and decommissioning of the TWP on the surrounding transportation systems and roadways in proximity of the TWP site. Level of service (LOS) determinations were applied to evaluate impacts to local transportation systems. LOS is a generally accepted measure used by traffic engineers, planners, and decision-makers to describe and quantify the congestion level on a particular roadway or intersection in terms of *speed*, *travel time,* and *delay.*

In addition, the analysis applied methodology contained in the 2000 *Highway Capacity Manual* to determine potential impacts to intersections from operations of the proposed action. This methodology was used to assess delays at an unsignalized intersection for movements operating under traffic control—a stop sign, for example. For an intersection at which the only stop sign is placed at a side street, delay would be reported for movements controlled by the stop sign. The delay then would be assigned a corresponding letter grade to represent the overall condition of the intersection or level of service. These grades range from LOS A, free-flow, to LOS F, poor progression. See Table 3.17-1 for LOS descriptions of signalized and unsignalized intersections.

The assessment of transportation-related impacts is based on evaluations and technical analyses designed to compare the pre-TWP conditions to the post-TWP conditions.

4.16.2 Discussion of Direct and Indirect Impacts

Alternative 1 - Proposed Action (40 WTGs)

Public Access

OHV Routes

There are no designated open routes that would be closed to off-highway vehicle (OHV) use near the TWP site. As such, construction, operation and maintenance, and decommissioning of the TWP and its facilities would not temporarily or permanently relocate, close, or eliminate any

OHV route, nor would these activities restrict OHVs to travel along designated routes. Therefore, the TWP would not adversely affect public access to any established designated OHV routes.

Washes Open Zones

The TWP area is not located in a "washes open zone", and therefore, not located in any CDCA Multiple Use Class. The construction, operation and maintenance, and decommissioning of the TWP and its facilities would not result in any temporary or permanent closure of any existing wash open zones to OHV users. Therefore, the TWP would not adversely affect public access to any established zones.

Transportation

Construction

Workforce. Construction of the TWP would be completed over an approximately four-month period (see Table 2.4-2, *Project Construction Schedule*, in Chapter 2 for detailed construction schedule). Construction activities are expected to occur six days a week, Monday through Saturday, between the hours of 5:30 a.m. and 9:00 p.m., and if work were required during Sundays, workers would be scheduled between 6:00 a.m. and 5:00 p.m., to meet the construction schedule and needs. This analysis assumes that personnel trips would arrive and depart the Project site during the peak hour of adjacent street traffic. This may not be the case for all shifts, but was chosen as the most conservative scenario in evaluating potential traffic impacts.

The majority of the workforce would originate from nearby communities including Rosamond, Tehachapi, and Lancaster. It is anticipated that many workers would carpool to the TWP site and access the site via 170th Street West and Rosamond Boulevard. A rate of 1.25 passengers per vehicle was used to estimate the number of employee-related trips. A maximum of 75 construction workers would be onsite daily during the construction period. However, the Traffic Study (Ruettgers & Schuler, 2011) analyzed a maximum of 135 workers resulting in approximately 216 one-way trips per day. This presents a conservative estimate of maximum one-way trips per day.

Worker trip distribution estimates were based on a review of information provided by the Applicant, regarding various locations from which worker trips would originate. As such, approximately 50 percent of construction-related traffic would access the TWP site from 170th Street West via Rosamond Boulevard and SR 14; approximately 35 percent would access the TWP site from 170th Street West via Backus Road and SR 14; and the remaining 15 percent would access the TWP site from 170th Street West via Tehachapi-Willow Springs Road and SR 58.

Furthermore, the analysis assumed that construction workers would report to one of several laydown areas within the TWP site at the start of each workday, and that workers would remain parked at these locations for the duration of the workday. Therefore, the majority of all worker-related trips would commute to the TWP site in the a.m. peak hour and depart the site during the p.m. peak hour.

Haul/Delivery Trucks. Construction equipment, machinery, delivery trucks, and heavy vehicles (e.g., loaders, various-sized bulldozers, graders, shovels, and backhoes) would access the TWP site using the same routes as construction workers (described above). In addition, haul trucks and delivery vehicles would utilize SR 138 as an alternate route to avoid traffic conflicts with other roadway users and reduce congestion along other State facilities (SR 14, SR 58), and local roads. Haul trucks would vary in size from half-ton pickup trucks to semi-tractor trailers carrying heavy earthmoving equipment as well as cranes and wind turbine generator components. Approximately 15 delivery vehicles and 52 heavy trucks would commute to and from the TWP site on a daily basis, resulting in approximately 30 delivery vehicle trips and 177 heavy truck trips per day during the construction period.[1] A complete list of construction equipment and heavy vehicles is provided in Table 2-3 in Chapter 2.

Laydown/Staging Areas. To accommodate the influx in worker and truck traffic during construction, several temporary staging and laydown areas for worker vehicles, trucks, equipment, materials, and other supplies would be designated onsite. Furthermore, laydown areas would also be relocated around the TWP site as construction progresses. Safety and efficiency concerns require onsite parking and laydown areas. That is, a traffic hazard could occur if workers were to park on public roadways or if public roadways were used for the staging and laydown of equipment, materials, and supplies; however, no construction within an existing public roadway is anticipated, and no roadway or lane closures would be required.

Trip generation estimates and trip distribution for the construction phase of the TWP are presented in Table 4.16-1, below. The table includes both average daily traffic (ADT) and peak-hour estimates during morning (a.m.) and afternoon (p.m.) periods for workers and heavy vehicles.

Assessment of the short-term effect that TWP construction traffic could have on local and regional roads includes review of existing traffic volumes and consideration of both the contribution of TWP construction traffic to existing traffic levels of service (LOS) and the capacity of the road to handle the additional traffic. Although construction-related traffic would fluctuate throughout the entire construction period due to scheduling of tasks and shifting workforce per TWP component, the analysis focused on the maximum increase in TWP-generated traffic on the surrounding transportation network. As such, traffic conditions were examined under Year 2012 conditions (when the peak workforce traffic would be generated). To determine Year 2012 traffic conditions at each study intersection, projected traffic

[1] Per *2000 Highway Capacity Manual* (HCM) guidelines, heavy truck volumes were converted to passenger-car equivalents (PCEs) using a factor of 1.7 trips per truck to account for the effective reduction in free-flow speed caused by the presence of heavy vehicles in the traffic flow. The factor was determined using Exhibit 20-9 of the Highway Capacity Manual and assuming level terrain and less than 300 truck trips per hour. The PCE factor does not apply to delivery vehicles.

TABLE 4.16-1
TRIP GENERATION – CONSTRUCTION PHASE

Traffic Type	Amount[a]	Average Daily Traffic	AM Peak Hour		PM Peak Hour	
			IN	OUT	IN	OUT
Construction workers	150	216[b]	108	2	2	108
Delivery Vehicles	15	30	2	0	0	2
Heavy Trucks	52	177[c]	22	0	0	22
	Total Trips	**423**	**132**	**2**	**2**	**132**

[a] Indicates the maximum amount of trips per day during construction period.
[b] Personnel volumes were calculated using a factor of 1.25 passengers per vehicle.
[c] Heavy truck volumes were converted to passenger-car equivalent volumes using a factor of 1.7 trips per day.

SOURCE: Ruettgers & Schuler, December 2011.

conditions were derived by applying an average annual growth rate of two percent per year to existing traffic volumes. Table 4.16-2 presents the levels of service for each study intersection under Year 2012 conditions.

TABLE 4.16-2
YEAR 2012 (NO PROJECT) PEAK-HOUR INTERSECTION LEVELS OF SERVICE (LOS)[A]

Intersection	Type	A.M. Peak		P.M. Peak	
		Delay	LOS	Delay	LOS
1. Tehachapi-Willow Springs Road / Backus Road	Stop Sign (Eastbound)	10.2	B	0.0	A
	Stop Sign (Westbound)	9.0	A	9.0	A
2. SR 14 Southbound Ramps / Backus Road	Stop Sign (Southbound)	8.8	A	8.8	A
3. SR 14 Northbound Ramps / Backus Road	Stop Sign (Northbound)	9.0	A	9.0	A
4. 170th Street West / Rosamond Boulevard	Stop Sign (Westbound)	8.5	A	8.6	A
5. 90th Street West / Rosamond Boulevard	Stop Sign (Northbound)	9.4	A	9.8	A
	Stop Sign (Southbound)	9.6	A	9.9	A
6. SR 14 Southbound Off-Ramp / Rosamond Blvd	Traffic Signal	7.3	A	7.1	A
7. SR 14 Northbound On-Ramp / Rosamond Blvd	Traffic Signal	4.2	A	20.7	C

[a] LOS calculations used the *2000 Highway Capacity Manual* operations analysis methodology.

SOURCE: Ruettgers & Schuler, December 2011.

As shown in Table 4.16-3, the increase in traffic associated with the construction activities at the TWP site would not change the Year 2012 service levels during the peak traffic periods at each study intersection, and these intersections would continue to operate at an acceptable level of service (LOS C or better).

TABLE 4.16-3
YEAR 2012 (WITH PROJECT) PEAK-HOUR INTERSECTION LEVELS OF SERVICE (LOS)[A]

		A.M. Peak		P.M. Peak	
Intersection	**Type**	**Delay**	**LOS**	**Delay**	**LOS**
1. Tehachapi-Willow Springs Road / Backus Road	Stop Sign (Eastbound)	10.3	B	0.0	A
	Stop Sign (Westbound)	10.0	A	9.3	A
2. SR 14 Southbound Ramps / Backus Road	Stop Sign (Southbound)	8.9	A	8.8	A
3. SR 14 Northbound Ramps / Backus Road	Stop Sign (Northbound)	9.0	A	9.8	A
4. 170th Street West / Rosamond Boulevard	Stop Sign (Westbound)	8.9	A	10.3	B
5. 90th Street West / Rosamond Boulevard	Stop Sign (Northbound)	9.9	A	11.7	B
	Stop Sign (Southbound)	10.2	B	12.1	B
6. SR 14 Southbound Off-Ramp / Rosamond Blvd	Traffic Signal	5.0	A	7.8	A
7. SR 14 Northbound On-Ramp / Rosamond Blvd	Traffic Signal	7.9	A	25.8	C

[a] LOS calculations used the *2000 Highway Capacity Manual* operations analysis methodology.

SOURCE: Ruettgers & Schuler, December 2011.

Under Year 2012 conditions, all of the study roadway segments would continue to operate at acceptable service levels (LOS A) with the increase in traffic from construction activities. Table 4.16-4 summarizes the Year 2012 conditions with construction traffic on study roadway segments.

Although the increase in worker and truck traffic during the construction period would not adversely affect LOS conditions at each study intersection, any piece of equipment that would exceed roadway load or size limits would need to be transported to the TWP site via multiple State roadways during construction, including SR 14, SR 58, and SR 138. As such, the transport of any equipment and machinery that would necessitate multi-axle trucks would require the Applicant to obtain special ministerial permits from Caltrans to move oversized or overweight materials. In addition, the Applicant must ensure proper routes are followed; proper time is scheduled for the delivery; and proper escorts, including advanced warning and trailing vehicles

as well as law enforcement control are available, if necessary. These roadways could be damaged due to TWP-related construction activities.

TABLE 4.16-4
YEAR 2012 WITH CONSTRUCTION-RELATED TRAFFIC
DAILY ROADWAY SEGMENT VOLUMES AND OPERATIONS

Segment	Existing Capacity[a]	Year 2012 + Construction ADT[b]	Volume-to-Capacity	Level of Service
Backus Road				
Tehachapi-Willow Springs Rd to SR 14	15,000	2,784	0.19	A
Rosamond Boulevard				
170th St West to Tehachapi-Willow Springs Rd	15,000	1,072	0.07	A
Tehachapi-Willow Springs Rd to 35th St West	15,000	5,217	0.35	A
35th St West to SR 14	40,000	20,805	0.52	A
Tehachapi-Willow Springs Rd				
North of Backus Rd	15,000	2,008	0.13	A
Rosamond Blvd to Backus Rd	15,000	5,109	0.34	A
State Route 14				
North of Backus Road	75,000	19,079	0.25	A
Rosamond Blvd to Backus Rd	75,000	18,866	0.25	A

a. Roadway capacity based on Kern County Classification.
b. Roadway volumes are representing bi-directional average daily traffic (ADT).

SOURCES: Ruettgers & Schuler, December 2011; Kern County General Plan *Circulation Element*, September, 2009.

Furthermore, as stated in Section 2.2.2, *Transportation Management*, transport of equipment and materials would be performed to minimize potential conflicts with general traffic along affected roadways, and to reduce any potential hazards from increased worker- and truck-related traffic within the TWP vicinity. The Applicant and its contractor(s) would develop a Traffic Management Plan and provide appropriate travel route information for construction materials, construction workers, and also identify the process for complying with any State requirements and obtaining necessary permits. The Traffic Management Plan would also reduce any potential adverse impacts to the local and regional circulation system because the Plan would reduce construction-related traffic impacts on the roadways at, and near the work sites, reduce potential traffic safety hazards, and ensure adequate access for emergency responders. Lastly, the Traffic Management Plan would coincide with the Emergency Response Plan that the Applicant and its contractor(s) would provide to outline emergency procedures, organization and personnel responsibilities, emergency alerting procedures, maps and diagrams of the facilities, incident documentation, investigation responsibilities, and post-emergency activities. Because the construction of the TWP and its facilities would include these aforementioned plans, the TWP would not result in any adverse impacts to the surrounding circulation network.

Operations

After construction of the TWP is completed, these facilities would require full-time employees to perform equipment inspection, testing and repairs as well as other daily maintenance activities as necessary. Approximately eight to 12 full-time staff would be required for daily operation and maintenance activities, which would generate up to 12 roundtrips (24 one-way trips) per day. Permanent staff would be expected to arrive and depart the TWP during typical peak commute periods. The TWP is not expected to generate any truck traffic during operational and maintenance activities.

Complete commercial operation of the TWP and its components is scheduled to occur by 2012. Because the number of trips generated during operational and maintenance activities would be minimal (24 total one-way trips) on a daily basis and fewer than trips generated during construction activities (described above), the increase in traffic at each study intersection would not degrade LOS, and the intersections would continue to operate at acceptable conditions. As a result, the operation and maintenance of the TWP and its facilities would not adversely affect traffic conditions within the surrounding circulation network.

Decommissioning

After the planned 30-year operating term, the TWP could be re-powered (if an extension of the operating term is granted by BLM) or it would be decommissioned and the existing equipment removed (within one year). Decommissioning activities would involved removing and disposing of the TWP components, and restoring the TWP site to pre-TWP conditions. The majority of decommissioning activities would require a similar workforce (in personnel size and haul trucks) as described for construction activities, and thus, similar to the effect of TWP construction on traffic conditions, the increase in traffic from decommissioning activities would not substantially degrade LOS at nearby study intersections, and these intersections would continue to operate at acceptable service levels. Furthermore, a Decommissioning Plan would be established by the Applicant, which would outline specific guidelines to reduce any potential traffic impacts to the surrounding circulation system as well as enforce appropriate traffic safety and travel management measures during these activities. As a result, the decommission activities would not result in any adverse impacts to the surrounding circulation network.

Alternative 2 - Modified Proposed Action (37 WTGs)

Public Access

The TWP site, under Alternative 2, would not be located in, or near, any CDCA Multiple Use classes, washes open zones, or any designated OHV routes. Similar to the Proposed Action, Alternative 2 would not result in any adverse impacts to public access.

Transportation

Alternative 2 would be similar to the Proposed Action; however under this alternative the overall size of the Project would be reduced by 94 acres and fewer wind turbine generators would be emplaced. Because Alternative 2 would be smaller in size and would include fewer components, the

estimated workforce, haul trucks, and operational personnel would be reduced compared to the Proposed Action. Because Alternative 2 would generate slightly less traffic along the same roadways as the Proposed Action, potential impacts to transportation under this alternative would be slightly reduced compared to the Proposed Action. Mitigation measures identified for the Proposed Action also would be required for this alternative.

Alternative 3 - No Action Alternative

Public Access

Under Alternative 3, there would be no development at the proposed TWP site. Because the proposed site is not located in, or near, any CDCA Multiple Use classes, washes open zones, or any designated OHV routes, Alternative 3 would not result in any adverse impacts to public access.

Transportation

If Alternative 3 were implemented, no changes to the site would occur because the BLM would not approve the proposed TWP and would not amend the CDCA Plan. As such, no wind energy project would be constructed, and the existing environmental setting would be maintained. As no development would occur under this condition, Alternative 3 would result in no changes to existing transportation conditions, and therefore, no potential impacts to those conditions.

Alternative 4 - No Project; Unsuitable

Public Access

Under Alternative 4, there would be no development at the proposed TWP site. Because the proposed site is not located in, or near, any CDCA Multiple Use classes, washes open zones, or any designated OHV routes, Alternative 4 would not result in any adverse impacts to public access.

Transportation

If Alternative 4 were implemented, BLM would not approve the proposed TWP, but would amend the CDCA Plan to permit development of another wind project on another site and would exclude development on the TWP site. As such, no wind energy project would be constructed at the site, and the existing environmental setting would be maintained. As no development at the site would occur under this condition, Alternative 4 would result in no changes to existing transportation conditions, and therefore, no potential impacts to those conditions.

Alternative 5 - No Project; Suitable

Public Access

Under Alternative 5, there would be development at the proposed TWP site; however, because the proposed site is not located in, or near, any CDCA Multiple Use classes, washes open zones, or any designated OHV routes, Alternative 5 would not result in any adverse impacts to public access.

Transportation

If Alternative 5 were implemented, BLM would not approve the proposed TWP, but would amend the CDCA Plan to permit the development of another wind project on the site; however, this alternative would exclude the development of the TWP and its facilities. As such, if the BLM were to approve another wind energy project, it is assumed that another wind project would be similar to the Proposed Action, therefore potential transportation impacts as described for the Proposed Action would potentially occur; however at a later time.

4.16.3 Cumulative Impacts

Geographic Extent/Context

The geographic scope of cumulative public access and traffic impacts includes the local and regional roadways and highways that would be used for TWP construction activities and for access by construction workers and vehicles. It is expected that construction of the facilities would begin in the third quarter of 2012 and be completed in four months. Construction of the TWP and its facilities would occur within the same vicinity and timeframe as other planned and proposed projects. Construction activities associated with the TWP would contribute incrementally to cumulative traffic increases from a number of other projects in the area that could be under construction at the same time. The combination of construction activities from these multiple projects could result in adverse cumulative impacts related to travel lane or road closures adjacent to the work sites, and construction traffic on local and regional roadways described in Section 3.16.2.

Existing Cumulative Conditions

A wide variety of activities and development contribute to the current cumulative conditions for transportation and public access in the TWP area, including residential, commercial, and industrial development in the local area. SR 14 (also called the Antelope Valley Freeway in the TWP area) is the principal regional access route leading to the Project site. SR 14 connects the Community of Mojave, north of the TWP site, to the Communities of Lone Pine and Big Pine, the City of Bishop, and the Mammoth Mountain Resort areas to the north. SR 58 provides for interregional and interstate travel, and is one of two major east/west thoroughfares through Kern County. SR 58 also serves as an alternative route to Interstate 5, to and from the Central Valley. The route accommodates significant volumes of heavy trucks traveling between central and

southern California. Past and ongoing projects and activities (including adjacent wind energy project development) using these two main regional highways would combine with traffic generated by the TWP or an alternative to affect transportation and public access within the vicinity of the Project site.

Reasonably Foreseeable Projects

Table 4.1-1 provides a list of current and 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 reasonably foreseeable. A number of cumulative projects were identified in Table 4.1-1 lists foreseeable projects in the Project area, which is SR 14, SR 58, SR 138, Rosamond Boulevard, and Backrus Road, and Tehachapi-Willow Springs Road in Kern County. Projects (see Figure 4.1-1) along these roadways would have the potential to affect the local road network. Additionally, projects listed in 4.1-4 would generate traffic along these local and regional roadways.

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 4.1-1, their effects were considered in the cumulative impacts analyses in this DEIS/PA.

Construction, Operation and Maintenance, Decommissioning

Public Access

The TWP site is not located in, or near, any CDCA Multiple Use classes, washes open zones, or any designated OHV routes. Therefore, the TWP would not have the potential to result in public access impacts that could combine with similar projects near the TWP.

Transportation

Construction

Although the construction scheduling associated with other nearby projects is generally unknown, the combined effect could constitute an adverse cumulative impact on traffic operations on the surrounding circulation system. Even with implementation of appropriate transportation management and safety plans during construction of the TWP, implementation of a coordinated transportation management plan is recommended to reduce the TWP's contribution to any potential traffic impacts to the surrounding network. In addition, the other nearby projects are under Kern County review and are each assumed to include the preparation of a similar construction traffic management and safety plans that would reduce overlapping traffic impacts.

Operations

Once operational, employee travel to and from the TWP site would result in a minimal amount of traffic (up to 24 one-way trips) on a daily basis. Traffic associated with other projects is not expected to either exceed the capacity of shared roadways or substantially degrade the LOS to below Kern County performance standards. Therefore, the TWP would not make a significant contribution to cumulative construction traffic impacts and would not result in any adverse impacts to the surrounding circulation network.

Decommissioning

Upon permanent closure of the TWP, its potential cumulative contribution to transportation impacts is unknown, as the number and proximity of cumulative projects in 30 years (expected life of the TWP) is unknown. It is assumed that the analysis of cumulative construction impacts discussed under construction impacts, above, could occur during decommissioning.

4.16.4 Mitigation Measures

Public Access

The construction, operation and maintenance, and decommissioning of the TWP would not adversely affect public access or facilities therein; therefore no mitigation measures are required.

Transportation

TRANS-1: Prior to construction, the Applicant would:

a. Submit engineering drawings of access road design for the review and approval of the Kern County Roads Department.

b. Obtain an encroachment permit from the Kern County Roads Department for applicable roads in the Kern County road maintenance system.

c. Enter into a secured agreement with Kern County to ensure that any County roads that are demonstrably damaged by TWP-related activities are promptly repaired and, if necessary, paved, slurry-sealed, or reconstructed per requirements of the State or Kern County.

TRANS-2: Prior to construction, the Applicant would:

a. Obtain all applicable permits from Caltrans, Kern County, and any other applicable agencies prior to construction pertaining to vehicle sizes, weights, roadway encroachment, and travel routes and adhere to any conditions in these permits.

TRANS-3: Prior to construction, the Applicant would:

a. Develop a Coordinated Transportation Management Plan and work with Kern County to prepare and implement a transportation management plan for roadways adjacent to and directly affected by the planned TWP facilities, and to address the transportation impact of the multiple overlapping construction projects within the vicinity of the TWP in the region. The transportation management plan shall include, but not be limited to, the following requirements:

    1. Coordination of individual traffic control plans for TWP and nearby projects.

    2. Coordination between the contractor and Kern County in developing circulation and detour plans that include safety features (e.g., signage and flaggers). The circulation and detour plans shall address:

        i. Full and partial roadways closures

        ii. Circulation and detour plans to include the use of signage and flagging to guide vehicles through and/or around the construction zone, as well as any temporary traffic control devices

        iii. Bicycle detour plans, where applicable

        iv. Parking along arterial and local roadways

        v. Haul routes for construction trucks and staging areas for instances when multiple trucks arrive at the work sites

b. Protocols for updating the transportation management plan to account for delays or changes in the schedules of individual projects.

4.16.5 Residual Impacts After Mitigation

Public Access

There would be no residual impacts after mitigation measures are implemented.

Transportation

There would be no residual impacts after mitigation measures are implemented.

4.17 Impacts on Vegetation Resources

This section analyzes potential impacts to vegetation resources from the construction, operation, maintenance, and decommissioning of the TWP. This analysis addresses potential impacts of the Proposed Action and alternatives to special-status plant species, sensitive natural communities, and other significant vegetation resources, including direct, indirect, and cumulative impacts.

4.17.1 Methodology for Analysis

This analysis is based on information from the focused special-status vegetation surveys and vegetation mapping conducted for the TWP; as well as information in the California Diversity Database (CNDDB), the California Invasive Plan Council (Cal-IPC), California Invasive Plant Inventory, the Manual of California Vegetation, and list of special-status species (see Section 3.17, Vegetation Resources for details) (CDFG, 2004; CDFG, 2005; Cal-IPC, 2006; CNPS, 1995).

Effects to vegetation resources in the Project area are classified as direct or indirect. Direct impacts are those caused by the action and occurring at the same time and place (for example, direct removal of vegetation through grubbing or grading). Indirect impacts are caused by the action and occur later in time or farther removed in distance, but are still reasonably foreseeable. Impact analyses also characterize effects to vegetation resources as temporary or permanent. A permanent impact refers to the loss of resources that otherwise precluded from restoration following a proposed action, while a temporary impact refers to resources that can be restored to a condition similar to pre-project state. In desert ecosystems, the definition of permanent impacts also needs to reflect the slow recovery rates of plant communities. Natural recovery rates from disturbance in these systems depends on the nature and severity of the impact. In this analysis, an impact is considered temporary if there is evidence to indicate that pre-disturbance levels of biomass, cover, density, community structure, and soil characteristics could be achieved within five years. Thus, some direct “temporary” impacts may be considered permanent if the revegetation criteria described above are not met. Anticipated temporary disturbances would result from batch plant/laydown areas, trenching for underground lines, construction of access roads, and turbine assembly areas. Permanent disturbances would result from the foundation and permanent access pad at each wind turbine generator (WTG), transformer boxes (if not housed within towers or nacelles), and a network of access roads that would provide access to each WTG.

4.17.2 Discussion of Direct and Indirect Impacts

Alternative 1 - Proposed Action (40 WTGs)

The Proposed Action would not have an effect on any federally protected wetlands as defined by Section 404 of the Clean Water Act, as no such areas occur within or adjacent to the Project area (Szijj, 2006), nor would the Proposed Action conflict with the provisions of an approved local, regional, or state Habitat Conservation Plan since no such plan is currently applicable to the

Proposed Action. Waters of the State have also been avoided by Project design and would not be impacted by the Project. The Proposed Action is within the boundaries of the West Plan (WEMO), which is comprised of the pending West Mojave Habitat Conservation Plan and an approved amendment to the CDCA Plan for the desert tortoise, Mohave ground squirrel, and nearly 100 additional species (BLM, 2005; BLM, 1980). The WEMO was approved as an amendment to the CDCA Plan for federal lands under the jurisdiction of the BLM in 2006, and the portion of the WEMO that would apply to non-BLM lands is still pending. Therefore, the regional Habitat Conservation Plan portion of the WEMO is not currently applicable to the Proposed Action.

Construction

Natural Communities

Construction of the Proposed Action would result in direct and indirect impacts to natural vegetation communities in the Project area. Direct effects to vegetation would occur from disturbance or removal of vegetation at the WTG pad sites, along access roads, and in association with the 34.5-kV underground electrical collection system. Vegetation would be removed as a result of surface-disturbing activities associated with blading, grading, vehicular traffic, and trenching. Areas adjacent to the proposed WTG pad sites, access roads, and underground electrical collection system would experience temporary disturbance associated with equipment access, materials, stockpile locations, and workspace requirements. Indirect impacts would include the increased potential for the establishment and spread of noxious weeds, exposure of soils to accelerated wind and water erosion, shifts in vegetation community composition, increase in the potential for fires, and loss of biodiversity.

Implementation of the Proposed Action would result in the direct disturbance of 190.9 acres of vegetation, or approximately 15.8 percent of the total Project area. This includes approximately 16.8 acres of Joshua Tree Woodland, 79.4 acres of Mojavean Juniper Woodland and Scrub, 42.6 acres of Non-native Grassland, 2.3 acre of Mojave Desert Wash Scrub, and 49.8 acres of Mojave Mixed Woody Scrub (Sapphos, 2014). Following construction, portions of the WTG pad sites, unused portions of roads and the electrical collection system ROW, and extra workspace areas would be reclaimed. Therefore, under the Proposed Action, the total permanent vegetation disturbance would be 23.6 acres; temporary disturbance would be 167.3 acres.

The duration of impacts to vegetation would depend, in part, on the success of mitigation and revegetation efforts and the time needed for natural succession to return revegetated areas to pre-disturbance conditions. Since recovery in arid environments is extremely slow, this is likely to be on the order of 10 to 20 years for Joshua tree woodland, Mojave desert wash scrub, and Mojavean juniper woodland and scrub. Effective restoration of Project-related disturbances would begin concurrent with the completion of Project construction and would be accomplished following the measures identified in the required *Habitat Restoration and Revegetation Plan* (Mitigation Measure VEG-3).

Implementation of the Proposed Action also would increase the potential for the occurrence of indirect effects. Disturbances from construction would increase the potential for the establishment and spread of invasive and noxious weed species. Noxious weeds tend to be aggressive colonizers of disturbed areas where the native vegetation has been removed. Therefore, disturbances associated with construction of the proposed WTG pad sites, access roads, and electrical collection system would provide opportunities for invasive and noxious weeds to become established. Once established, weeds would increase fuel levels and the potential for increased intensity and frequency of wildfires. Wildfire within the Project area, where vegetation is generally intolerant of fire, could potentially lead to mortality of native plant species and transform the vegetation community from native vegetation to non-native grasslands. To minimize the potential for adverse effects from invasive and noxious weed establishment, monitoring for invasive and noxious weeds would be necessary. If invasive and noxious weeds are found, control and eradication measures would be implemented as outlined in the Weed Management Plan identified in Measure VEG-1c.

Additional indirect construction-related impacts could include soil compaction, disturbance of the structure and ecological functioning of microphytic soil crusts, which may affect seed germination, reduce soil nutrition and render the soil vulnerable to the potential for increased wind and water erosion prior to post-construction site restoration. However, indirect disturbance effects from construction could be reduced with the implementation of required mitigation measures VEG-1a, VEG-1c, and VEG-3.

Sensitive Natural Communities

Sensitive natural communities include aquatic habitats and vegetation communities that are considered rare or uncommon in the region, receive regulatory protection from the Resource Agencies, or are identified by CDFW as having a high inventory priority. Such areas include wetlands, as defined by the U.S. Army Corps of Engineers (USACE), stream corridors regulated by CDFW, and sensitive vegetation communities identified by the CDFW California Natural Diversity Database (CNDDB). Joshua Tree Woodland is the only sensitive natural community in the Project area that is subject to direct effects. Approximately 16.8 acres of Joshua Tree Woodland would be subject to direct removal. Mitigation Measure VEG-1b and VEG-3 would be implemented to minimize and avoid impact to Joshua Tree Woodland habitat.

Federal Waters of the United States

Each of the drainages that traverse the Project area are non-navigable, isolated drainages that do not connect to any navigable waterway subject to the jurisdiction of the USACE pursuant to Section 404 of the Clean Water Act. As a result, the USACE concluded that no federally jurisdictional wetlands occur in the Project area (Szijj, 2006). No federal waters would be impacted by the Proposed Action.

State Jurisdictional Areas

Nine blueline drainages traverse the Project area and support varying degrees of desert wash vegetation. These features flow ephemerally during heavy rains and collect roadside and

sheetflow runoff, but do not experience enough rainfall or water flow to support riparian vegetation. The proposed road system was designed such that none of the identified drainages or other CDFW-jurisdictional areas would be impacted by the Proposed Action (Sapphos, 2011a).

Direct impacts include filling of jurisdictional streambed areas to create road crossings or to construct underground collector lines. Examples of indirect impacts to jurisdictional resources are stream bank erosion and stream sedimentation. These jurisdictional areas provide beneficial hydrological functions and services typical of low to moderate disturbance desert scrub systems. These functions include, but are not limited to, groundwater recharge, flood peak attenuation, floodwater storage, sediment trapping and transport, nutrient trapping, and wildlife habitat. The functions that these jurisdictional areas provide would not be impaired by construction and operation of the TWP.

Special-Status Plants

Based on focused botanical surveys performed in 2011 and 2012, no special-status plant species were identified in the Project area (Sapphos, 2013). Thus, no impacts to special-status plants are anticipated.

Operation and Maintenance

The use of access roads during operation and maintenance activities for the Proposed Action could result in minor indirect impacts to vegetation communities and special-status plants as a result of fugitive dust settling on vegetation, although the magnitude of fugitive dust impacts would be small given the reduced number of vehicle trips and onsite worker presence as compared to the construction phase. Operation and maintenance activities would not likely introduce new invasive weeds to the TWP site or further spread invasive weeds that are already present onsite.

No operational impacts were identified to wetland resources under the Proposed Action.

Decommissioning

Decommissioning activities associated with the Proposed Action would result in direct and indirect temporary and permanent losses of sensitive vegetation and direct effects resulting from minor vegetation clearing, grading, or other surface disturbance within areas initially disturbed during the construction phase. Because work would occur in areas that were previously disturbed, decommissioning likely would not affect special-status plant species or federal or state jurisdictional waters. Decommissioning activities could result in the introduction or spread of invasive weeds similar to during the construction phase; however, the magnitude of this potential impact would be reduced with implementation of mitigation measure VEG-1c.

Alternative 2 - Modified Proposed Action (37 WTGs)

Construction

Vegetation Communities

Construction activities associated with Alternative 2 would result in direct temporary and permanent losses of native vegetation and indirect effects resulting from vegetation clearing, grading, or other surface disturbance similar to those described for the Proposed Action. The total area estimated to be impacted by Alternative 2 (including short-term disturbance) is less than the Proposed Action. Anticipated impacts under Alternative 2 include 158.5 acres of temporary and 22.9 acres of permanent disturbance within the five vegetation communities and land cover types that occur in the Project area.

Alternative 2 would result in direct impacts to the following vegetation communities: 16.8 acres of Joshua Tree Woodland, 65.7acres of Mojavean Juniper Woodland and Scrub, 42.6 acres of Non-native Grassland, 2.3 acres of Mojave Desert Wash Scrub, and 49.8 acres of Mojave Mixed Woody Scrub. The nature of these impacts are similar to the Proposed Action, but Alternative 2 would decrease impacts to vegetation communities by approximately 9.5 acres as compared to the Proposed Action.

Ground disturbance including grading as well as construction traffic along dirt access roads associated with Alternative 2 would result in increased fugitive dust, similar to the Proposed Action. Dust can have deleterious physiological effects on plants and may affect their productivity and nutritional qualities. In addition, construction activities associated with Alternative 2 could result in increased erosion, which can accelerate the loss of nutrients in the soil and reduce the amount of nutrients available to plants. The nature of these impacts would be the same as that described for the Proposed Action, but the magnitude would be reduced in proportion to the reduction in Project size for Alternative 2. Mitigation for construction activities would be the same as for the Proposed Action.

Sensitive Natural Communities

Joshua Tree Woodland is the only sensitive natural community that would be affected under Alterative 2, with approximately 1.7 acres that would be permanently impacted and 15.1 acres that would be temporarily impacted. Mitigation Measures VEG-1b and VEG-3 would be implemented to minimize and avoid impact to Joshua Tree Woodland habitat.

Special-Status Plant Species

Alternative 2, like the Proposed Action, is not expected to impact individuals or populations of special-status plant species.

State and Federal Jurisdictional Waters

Alternative 2, like the Proposed Action, would not impact federal or CDFW-jurisdictional waters.

Nonnative and Invasive Weeds

Alternative 2 would include the same types of construction activities as the Proposed Action, but the amount and duration of disturbance would be reduced in proportion to the reduction in Project size for Alternative 2. The nature of impacts related to the potential introduction and spread of nonnative and invasive weeds would be the same as described for the Proposed Action, however the magnitude would be reduced in proportion to the reduction in Project size for Alternative 2. Mitigation for construction activities would be the same as for the Proposed Action.

Operation and Maintenance

Operation and maintenance impacts would be the same as those described for the Proposed Action, but the magnitude would be slightly reduced in proportion to the reduced Project size associated with Alternative 2. Mitigation for operation and maintenance activities would be the same as for the Proposed Action.

Decommissioning

Decommissioning activities associated with Alternative 2 would result in direct and indirect temporary ground disturbance during site grading, restoration of preconstruction ground contours, or other surface disturbance, similar to decommissioning impacts associated with the Proposed Action. The magnitude of this impact would be reduced in proportion to the reduction in Project size associated with Alternative 2. As discussed for the Proposed Action, decommissioning activities would not likely affect special-status plant species, or federal or state jurisdictional waters. Decommissioning activities associated with Alternative 2 could result in the introduction or spread of invasive weeds similar to, but at a smaller magnitude than the Proposed Action. Mitigation for decommissioning activities would be the same as for the Proposed Action.

Alternative 3 - No Action Alternative

Under Alternative 3, no action would occur on the site and existing conditions relevant to vegetation resources would continue. No impacts associated with the TWP would occur.

Alternative 4: No Project; Unsuitable

Under Alternative 4, no action would occur on the site and no future development of the site for wind energy would be allowed. Existing conditions relevant to vegetation resources would continue. No impacts associated with the TWP would occur under Alternative 4.

Alternative 5: No Project; Suitable

Under Alternative 5, no action would occur on the site, however future development of the site for wind energy could occur due to the suitability determination. No impacts associated with the TWP would occur under Alternative 5. Existing baseline conditions for vegetation resources would remain unchanged, but could be altered at some time in the future by construction of a potential proposed wind energy development. If that were to occur, impacts to vegetation

resources would occur similar to those described for Alternatives 1 and 2, but the specific types and magnitudes of impacts cannot be determined at this time.

4.17.3 Cumulative Impacts

Geographic Extent/Context

The geographic scope for the analysis of cumulative impacts related to vegetative resources includes the vicinity of all existing and reasonably foreseeable cumulative projects located throughout the western Mojave Desert and Tehachapi and Piute Mountains including the Tehachapi Wind Resource Area. The Project area is located within and adjacent to federal and private lands that support native vegetation communities that are largely undeveloped or support wind energy development. Areas of biological significance in the Project vicinity that have potential to be affected by the Proposed Action and Alternative 2 include the California Desert Conservation Area, Middle Knob and Horse Canyon Areas of Critical Environmental Concern (ACEC), and BLM Limited Use Lands.

The analysis of cumulative effects considers a number of variables including geographic (spatial) limits, temporal limits, and the characteristics of the resources being evaluated. The geographic scope of this analysis is based on the nature of the geography surrounding the Project area and the characteristics and properties of each resource. In addition, each project will have its own implementation schedule, which may or may not coincide or overlap with the Proposed Action's schedule. This is a consideration for short-term impacts from the Proposed Action. 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 Action, except where otherwise noted.

A cumulative impact to native vegetation communities or special-status plant species would occur if the Proposed Action, combined with the reasonably foreseeable cumulative projects in the vicinity, would: 1) result in those vegetation communities becoming limited in distribution and/or population size within the cumulative analysis area, or if the compensation requirements for those impacts cannot be achieved; 2) limit the extent of jurisdictional resources within the cumulative analysis area, or if the compensation requirements for those impacts cannot be achieved; 3) result in the introduction or spread of invasive weed species across the cumulative analysis area; or 4) increase levels of fugitive dust throughout the cumulative analysis area.

Existing Cumulative Conditions

Numerous existing wind developments occur in the vicinity of the Project area, and scattered residential, commercial, and industrial developments including operating mines occur as well. Livestock grazing is common throughout the area. Cities to the south in Los Angeles County, such as Lancaster and Palmdale, have experienced rapid urbanization. Urbanization, population growth, and continuing development pressure particularly in the Antelope Valley portion of the western Mojave Desert in Kern and Los Angeles Counties have brought about substantial changes to, and effects on, natural resources. Consequently, the modification, alteration, and/or

loss of vegetation, special-status plants, federal and state jurisdictional areas, and the introduction of invasive weeds are occurring throughout the region. Future growth and development in the analysis area will likely continue these impacts.

Vegetation communities are largely similar in the analysis area and consist primarily of a variety of desert scrubs at lower elevations and Joshua tree and juniper woodlands, montane scrubs, and oak and pine woodlands at higher elevations. Annual grasslands occur interspersed throughout these communities, and livestock grazing is prevalent in the region. Since much of the analysis area is desert, there are few federal or CDFW-jurisdictional waters present (and no federally jurisdictional waters in the Project area).

The Project area does not support any known populations of special-status plant species, and special-status plant species have not been detected on adjacent project sites. The majority of the cumulative impacts analysis area supports undeveloped lands, and these surrounding areas have the potential to support populations of special-status plant species.

Invasive non-native weeds are present throughout the analysis area, although their numbers vary depending on the level of land disturbance. Weed species, such as cheatgrass, ranked as having a high level of invasiveness and were found to be abundant throughout the Project area, and are widespread and abundant in the general region (Sapphos, 2011a).

Reasonably Foreseeable Projects

Table 4.1-1 provides a list of current and reasonably foreseeable projects, including other proposed or approved renewable energy projects; various BLM-authorized actions/activities; proposed or approved projects within Kern County's jurisdiction; and other actions/activities that the Lead Agencies consider reasonably foreseeable. 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 4.1-1, their effects were considered in the cumulative impacts analyses in this Draft EIS/PA. Because the geographic area of effect for cumulative impacts to vegetation resources includes the entire region, all projects presented in Table 4.1-1 are considered in the analysis of cumulative effects for the Proposed Action.

Four projects were identified within the geographic scope of cumulative analysis in close proximity to the Project area that would impact vegetation and potentially federal or CDFW-jurisdictional areas or special-status plant species. These projects also could result in the introduction or spread of invasive weeds. These projects include (see Table 4.1-2) :

1. MWEP (5,820-acres);
2. PWEP (8,300-acres);
3. Pacific Wind Infill Project (1,325-acres); and
4. Catalina Renewable Energy Project (6,739-acres)

Also of particular note are development projects proposed on large tracts of land, which have the potential to reduce or eliminate large areas of native vegetation. Large-scale development projects in the cumulative study area include several large proposed wind and solar developments (e.g., the Avalon Wind Energy Project (10,000 acres), Alta Wind Infill II Project (9,780 acres), Rising Tree Wind Energy Project (4,019 acres), Alta Wind Energy Project (3,660 acres), and the Morgan Hills Wind Energy Project (3,604 acres), among others). These projects would also result in loss to native vegetation communities, special-status plant species, and jurisdictional resources.

Construction, Operation and Maintenance, Decommissioning

Natural Communities

Several reasonably foreseeable projects in the cumulative impacts analysis area would likely impact similar vegetation communities to those found in the Project area. Permanent losses and temporary impacts to vegetation associated with the Proposed Action combined with losses associated with past, present, and future projects are considered a cumulative impact because these combined impacts have potential to reduce the extent of those communities within the cumulative impacts analysis area. The Proposed Action and the other projects would be required to mitigate impacts to sensitive vegetation communities.

The Proposed Action would have minimal impacts on sensitive natural communities and no impacts to special-status plants. Only a fraction of the Joshua tree woodland habitat in the Project area would be affected (16.8 acres of 96 acres) and no riparian or CDFW-regulated riparian areas would be affected by the Proposed Action. No other sensitive natural communities occur in the Project area. Additionally, the implementation of Mitigation Measures VEG-1a, VEG-1b, VEG-1c, VEG-2, VEG-3, WIL-1c, AI-1, and WA-9 would minimize, avoid, and compensate for the Project's individual and cumulative impacts to sensitive vegetation resources. Other reasonably foreseeable projects would likely have similar mitigation requirements. Therefore, cumulative impacts due to construction, operation, and decommissioning of the Proposed Action, in conjunction with the related past, present, or reasonably foreseeable probable future projects, would not result in cumulatively considerable effects to special-status plants or sensitive natural communities.

State and Federal Jurisdictional Areas

Construction and decommissioning activities could result in minor indirect impacts to CDFW-jurisdictional drainage features as a result of increased sedimentation due to site erosion; however, no direct effects to federal or CDFW-jurisdictional areas are anticipated. Thus, the Proposed Action would not reduce the extent or quality of jurisdictional resources within the cumulative impacts analysis area.

The reasonably foreseeable projects within the cumulative impacts analysis area may impact ephemeral jurisdictional resources. Impacts to jurisdictional resources associated from past, present, and future projects may cause a cumulative impact because the impacts have a potential to reduce the extent of those jurisdictional resources within the cumulative impacts analysis area.

However, the magnitude of potential cumulative impact to federal and CDFW-jurisdictional features is small given that there are tens of thousands of acres of jurisdictional habitats within the cumulative impacts analysis area, and federal and State regulations limit allowable impacts and require adequate compensation to eliminate the loss of such features.

The Proposed Action would not impact federally protected waters (i.e., waters of the U.S.) or CDFW-jurisdictional areas. Implementation of Mitigation Measures VEG-1a, VEG-1b, VEG-1c, VEG-2, WIL-1c, as well as AIR-1 (Fugitive Dust Control Plan), WATER-1 (Drainage and Erosion Control Best Management Practices) and WATER 4 (Implementation of a Storm SWPPP) would reduce the Proposed Action's potential indirect impacts to CDFW-jurisdictional areas. It is expected that the other reasonably foreseeable projects in the cumulative impacts analysis area would include similar mitigation measures to reduce and mitigate those projects' impacts to jurisdictional areas as well. Following the implementation of protective measures, the Proposed Action would not impact federal or State-jurisdictional areas and would not contribute to the cumulative loss or degradation of such areas. Therefore, viewed in conjunction with the related past, present, or reasonably foreseeable future projects, the Proposed Action would not cumulatively contribute to impacts upon these resources.

Nonnative and Invasive Weeds

Construction, operation and maintenance, and decommissioning activities associated with the Proposed Action would result in ground disturbance that has the potential to result in the introduction or spread of invasive weed species. Invasive weed species exist within the cumulative impacts analysis area as a result of natural events such as wildfires, as well as from past and ongoing residential, commercial, and industrial development and land uses including livestock grazing and off-highway vehicle use. The Proposed Action and the reasonably foreseeable projects within the cumulative impacts analysis area have the potential to introduce or spread invasive weed species throughout the cumulative impacts analysis area.

The Proposed Action and the majority of the other reasonably foreseeable projects would be required to mitigate impacts associated with invasive weed species through the preparation and implementation of Weed Management Plans and Weed Control Plans. Implementation of Mitigation Measures VEG-1c and VEG-3 would offset the potential impacts associated with the introduction and spread of invasive weed species for the Proposed Action.

4.17.4 Mitigation Measures

VEG-1a: Minimize construction-related impacts. The Project design shall limit the size of temporary construction work areas and minimize the impacts to sensitive vegetation communities to the greatest extent feasible. 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) shall be delineated with orange construction fencing or staking to clearly identify the limits of work and shall be verified by the biological monitor (Mitigation Measure WIL-1b) prior to ground-disturbing activities. Exclusionary fencing, staking or other marking shall remain in place for the

duration of construction. Spoils shall 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 shall be minimized. All disturbances, vehicles, and equipment shall be confined to the flagged areas.

All grading activities shall include topsoil salvage. Topsoil shall be removed, stockpiled onsite, and returned to the original site or used in habitat restoration activities elsewhere on the site.

When feasible, construction activities shall 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 and microphytic soil crusts. Drive and crush will reduce the recovery time of desert shrubs within temporary construction areas.

VEG-1b: Prepare and Implement a Joshua Tree Preservation Plan. Prior to the issuance of a Notice to Proceed by BLM, the Project proponent shall submit a *Joshua Tree Preservation Plan* to compensate for permanent impacts to Joshua Tree Woodland habitat. The Plan, to be prepared by a qualified biologist or botanist, shall describe field methods used to delineate acreage of Joshua tree woodland and shall provide a detailed compensatory mitigation strategy that includes the following provisions:

1. Documentation of the location and acreage of Joshua tree woodland that would be subject to permanent disturbance and a description of the field methods used to delineate acreage of Joshua Tree Woodland. Specific methods shall be specified for avoiding Joshua tree woodlands and identifying suitable candidate trees for salvage and translocation.
2. Specific efforts that would be made to minimize the removal of Joshua trees and associated vegetation associated with permanent and temporary impacts. If necessary, native vegetation should be flagged for protection.
3. The plan shall specify that a qualified biologist shall monitor construction and all Joshua trees removed or damaged shall be recorded and replaced at appropriate mitigation ratios as specified below.
4. Compensatory mitigation strategy, based on one or more of the following options:
    a) *Preservation*. The Project proponent shall acquire and preserve off-site, privately-owned parcels containing at minimum the number of individual Joshua trees impacted by the Project. The Project proponent may mitigate all or part of the Project's impacts to Joshua trees onsite, as follows: Delineate and designate one (1) or more parcels (not on federal lands) for dedication for permanent conservation management; establish a conservation easement on those parcels, the easement to be held and managed by a suitable management entity as determined by the Director of the Kern County Planning and Community

Development Department; prepare and implement a Habitat Management Plan to maintain habitat conditions on the site in perpetuity; and provide a non-wasting endowment sufficient to implement the habitat management plan in perpetuity. The mitigation lands shall provide habitat at a 1:1 ratio for impacted Joshua Tree Woodland habitat, comparable to habitat to be impacted by the Project (i.e., located near to the Project area, with similar abundance and size of Joshua trees, similar dominant vegetation community, and similar levels of disturbance or habitat degradation). The Habitat Management Plan shall specify maintenance and monitoring requirements for each parcel, which shall include but shall not be limited to fencing and access control; signage; security and enforcement; weed control; control measures for feral animals or pets; native habitat enhancement; fire prevention and management; and other long-term habitat considerations as appropriate.

b) *In lieu monetary funding*. The Project proponent may mitigate all or part of the Project's impacts to Joshua Tree Woodlands by funding the acquisition and management in perpetuity of Joshua tree woodland habitat or habitats similar to those that contain impacted Joshua trees on site. Funding and management may be provided either through an existing mitigation bank (e.g., as managed by the City of Lancaster Parks, Recreation and Arts Department) or through a third-party entity such as the Wildlife Conservation Board or a regional Land Trust. The in-lieu fee shall provide sufficient funds to acquire appropriate lands to provide habitats containing Joshua trees at a 1:1 ratio for impacted lands, comparable to habitat to be impacted by the Project (i.e., similar abundance and size of Joshua trees, similar dominant vegetation community, and similar levels of disturbance or habitat degradation).

VEG-1c: Implement a Weed Management Plan. The Project proponent has prepared a *Weed Management Plan* to address the control of invasive weeds. The Weed Management Plan shall be implemented in cooperation with the BLM and includes a risk assessment of the invasive weed species currently known within the Project area, procedures to control their spread on site and to adjacent off-site areas, and procedures to help minimize the introduction of new weed species. The Plan shall be approved by the BLM prior to the issuance of a Notice to Proceed and shall be implemented prior to, during, and following the completion of construction for the life of the Project.

VEG-2: Implement Best Management Practices to Minimize Impacts to Jurisdictional Areas. The Proposed Action was designed to avoid impacts to jurisdictional drainage areas, and the Project area does not contain any navigable waterways subject to the jurisdiction of the USACOE pursuant to Section 404 of the Clean Water Act. Additionally no direct impacts would occur to CDFW-jurisdictional features. To avoid any potential indirect impacts to jurisdictional areas, the following Best Management Practices shall be implemented during all construction activity near ephemeral drainages:

1. Vehicles and equipment shall not be operated in areas of standing water or flowing water.
2. The Project proponent shall minimize road building, construction activities, and vegetation clearing within ephemeral drainages to the extent feasible, and then only with an appropriate permit from the applicable Resource Agency.
3. The Project proponent shall not allow 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 shall 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 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, shall be prevented from contaminating the soil and/or entering ephemeral drainages.
6. When operations are completed, any excess materials or debris shall be removed from the work area. No rubbish shall be deposited within 150-feet of the high water mark of any drainage.
7. No equipment maintenance shall occur within 150-feet of any ephemeral drainage where petroleum products or other pollutants from the equipment may enter these areas under any flow.

VEG-3: Habitat Restoration and Revegetation Plan. Prior to the issuance of grading permits and/or a Notice to Proceed by the BLM, the Project proponent shall develop and submit a *Habitat Restoration and Revegetation Plan* to the BLM for review and approval. The Plan shall be reviewed by the BLM to ensure appropriate compliance with the requirements of NEPA and shall include the following provisions:

1. Restoration of all areas temporarily disturbed by Project construction to pre-construction conditions; including temporary disturbance areas around structure construction sites, laydown/staging areas, and temporary access roads.
2. Work areas (including, but not limited to, staging areas, access roads, and sites for temporary placement of construction materials and soils) shall be delineated with orange construction fencing or staking to clearly identify the limits of work. Fencing/staking shall remain in place for the duration of construction. If soil stockpiling is required, soils shall 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 shall be minimized. All disturbances, vehicles, and equipment shall be confined to the flagged areas.

3. All grading activities shall include topsoil salvage. Topsoil shall be removed, stockpiled onsite, and returned to the original site or used in habitat restoration activities elsewhere on the site.
4. Hydroseeding, drill seeding, broadcast seeding or an otherwise proven restoration technique shall be utilized on all disturbed surfaces using a locally endemic native seed mix approved by the BLM.
5. The Plan shall describe preplanting site preparation methods and include an analysis of anticipated planting effectiveness for selected species and site environmental conditions based on current literature.
6. The Plan developed shall establish performance criteria and time frames for restoration of temporarily disturbed areas in addition to provisions for a monitoring program to assess the success of restoration efforts. At a minimum, the mandatory performance criteria shall include the following measures: survival of planted stock (e.g., at least 50 percent survival); percent cover by native species (e.g., at least 20 percent coverage by species, or coverage shall be similar to reference portions of the Project area; and percent coverage by invasive species (e.g., should not exceed by more than 50 percent that found in reference areas). The Plan shall: a) clearly identify the minimum length of the monitoring period (e.g., for a minimum of 7 years, or until performance standards have been met for at least 3 consecutive years), b) identify required maintenance activities and a maintenance schedule to be applied during the monitoring period, and c) specify vegetation replacement or contingency requirements if performance criteria are not met.
7. The Plan shall be developed and implemented to preserve native shrub communities to the maximum extent feasible.

4.17.5 Residual Impacts after Mitigation

Implementation of the avoidance, minimization, and mitigation measures described in Section 4.17.4 would substantially reduce the direct and indirect impacts to vegetation resources, including permanent and temporary impacts to vegetation communities, special-status plant species, and federal and State-jurisdictional areas in the Project area. Implementation of these measures would also ensure compliance with local policies and ordinances protecting vegetation resources. Implementation of the required mitigation would not result in any additional impacts to vegetation resources. No residual impacts to vegetation resources would occur with the implementation of the avoidance, minimization, and mitigation measures.

4.18 Visual Resources

This section discusses direct and cumulative effects on visual resources that would occur with implementation of the Proposed Action and alternatives, and mitigation measures to avoid or reduce visual effects.

4.18.1 Impact Assessment Methodology

The Proposed Action and alternatives is analyzed for its effects on visual resources using an assessment of the visual contrast within the landscape created by components of the Proposed Action. The visual contrast is compared with the Interim VRM Class Objectives assigned to the landscape. If the contrast rating reveals nonconformance of the Proposed Action with Interim VRM Class objectives, and mitigation measures are insufficient to bring the Proposed Action into compliance, then impacts would be adverse and unavoidable. The Proposed Action is evaluated for conformance with the following VRM objective:

1. *VRM Class IV*: The objective of this class is to ***provide for management activities*** that 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 should be made to ***minimize the impact*** of these activities through careful location, minimal disturbance, and repeating the basic elements.

2. *VRM Class II*: The objective of this class is to ***retain*** the existing character of the landscape. The level of change to characteristic landscape should be ***low***. Management activities may be seen, but ***must not attract the attention of the casual observer***. Any change must repeat the basic elements of form, line color and texture found in the predominant natural features of the characteristic landscape."

The overall VRM goal is to minimize visual impacts, and mitigating measures should be prepared for all adverse contrasts that can be reduced, even if the proposed action meets VRM objectives. In addition to permanent visual contrast created in the landscape, the Proposed Action is analyzed for adverse effects due to lighting and glare, as well as temporary construction disturbances.

Visual Contrast Rating Process

The degree to which the Proposed Action adversely affects the visual quality of a landscape is directly related to the amount of visual contrast between it and the existing landscape character. The degree of contrast is measured by separating the landscape into major features (land/water, vegetation, structures) then assessing the contrast introduced by the Project in terms of the basic design elements of form,[1] line,[2] color, and texture. The contrast of the Proposed Action with landscape elements is then rated as none, weak, moderate or strong, as defined in Table 4.18-1. The purpose of this method is to reveal elements and features that cause the greatest visual

[1] Contrast in form results from changes in the shape and mass of landforms or structures. The degree of change depends on how dissimilar the introduced forms are to those continuing to exist in the landscape.

[2] Contrasts in line results from changes in edge types and interruption or introduction of edges, bands, and silhouette lines. New lines may differ in their sub-elements (boldness, complexity, and orientation) from existing lines.

impact, and to guide efforts to reduce the visual impact of a proposed action or activity. This process is described in detail in Handbook H-8431-1, Visual Resource Contrast Rating, and documented using BLM Form 8400-4 (see Appendix G).

TABLE 4.18-1
VISUAL CONTRAST RATINGS

Degree of Contrast	Criteria
None	The element contrast is not visible or perceived.
Weak	The element contrast can be seen but does not attract attention.
Moderate	The element contrast begins to attract attention and begins to dominate the characteristic landscape.
Strong	The element contrast demands attention, will not be overlooked, and is dominant in the landscape.

SOURCE: BLM, 1986b

The criteria for visual contrast are aligned with the management objectives for each Interim VRM Class. For example, if a project results in a weak visual contrast, it is likely to be in conformance with Interim VRM Class II, whereas a project that results in a moderate contrast would likely be in conformance with VRM Class III objectives but would not conform to VRM Class II objectives.

Selection of Key Observation Points

The contrast rating is completed from the most critical viewpoints, or Key Observation Points (KOPs). The intent of establishing KOPs is to visualize the contrast created by the proposed action from locations most representative of how the public perceives the affected landscape. The “public” may include highway travelers, travelers on local roads, off-highway vehicle users, dispersed recreational users in surrounding wilderness areas, or users of BLM facilities, such as long-term visitor areas. The sensitivity of these diverse user groups to changes in the landscape are influenced by a number of factors, including how prominent the view of the proposed Project is (in terms of scale, distance and angle of observation), the frequency and duration that viewers are exposed to the view, and whether the viewer groups are aware of their surroundings or expectant of high-quality views.

On March 2, 2012, a team of visual resource management specialists from the BLM visited the TWP site and selected three KOP's for use in the visual analysis and from which visual simulations of the Project were prepared (Table 4.18-2). The basis of selecting these KOPs was to capture representative views for different user types (e.g., users of the Pacific Crest Trail and travelers on local roads) and distance zones (i.e., foreground/middleground, or background). While several local roads lead to the site, the Proposed Action would not be visible from a large portion of the city of Rosamond due to the distances involved, view blockage due to structures, and low elevation differences/topography. The location and characteristics of each KOP are summarized below.

TABLE 4.18-2
KEY OBSERVATION POINTS

KOP Number, Name	Distance and Direction from TWP	Landscape Character and User Type
KOP 1, Rosamond City Center	14.4 miles southeast	Low, flat valley bottom. Foreground view of a road, vertical power poles, and developed, human-made structures. Background views of mountains with clustered, moderately sloped hilltops. Representative of a public gathering place, where people will likely be while viewing public land (e.g., park, library, courthouse).
KOP 2, Rosamond Road	5.9 miles southeast	Rosamond Road between 90th W. and 170th W. Street in the Willow Springs vicinity. Flat rural/agricultural setting, with mountainous backdrop. Representative view from rural/local roadways.
KOP 3, Pacific Crest Trail	1.1 miles east	Flat land with minimal vertical relief in the foreground, middleground, and in the background. Representative of typical landscapes from unpaved road. View from Pacific Crest Trail.

SOURCE: Sapphos Environmental, Inc., 2012.

Visual Simulations

A geographic information systems analysis was performed to identify the change in the visual character and quality of the landscape with implementation of the Project. This analysis includes modeling that takes into account the height of the turbines and the local and regional terrain. This analysis determines what portions of the Project property are in visible range from the combined viewsheds of KOPs within and surrounding the Project property. This analysis includes a graphic representation of those areas of the Project that would be visible from the combined viewsheds of the KOPs.

4.18.2 Alternative 1 - Proposed Action (40 WTGs)

The Proposed Action would result in the permanent clearance of approximately 24 acres of a predominantly naturally-appearing landscape to support 40 WTGs that would range in height from 389 to 500 feet from tower base to blade tip. The most striking visual changes associated with the Project would be the height of the wind towers, which would be visible from a large area (see Figure 3.18-1), and would be characterized by complex geometric forms and lines and industrial surfaces that are dissimilar to the surrounding natural landscape character. Temporary land disturbance related to construction of the TWP is estimated at approximately 171 acres, and would include land disturbance associated with temporary roads; material storage, staging and laydown areas; and wind tower assembly work areas/crane pads. The 15- to 18-foot-diameter wind turbine towers would be mounted on concrete foundations approximately 50 feet in diameter and would each occupy an approximately 55-foot by 40-foot graveled pad. The size of the concrete foundations and graveled pad may vary depending on the size of the WTG and its tower structure. Permanent disturbance related to the TWP is estimated at approximately 24 acres. About 22 acres of this total would be associated with TWP access roads and the remainder would be occupied by the wind tower base areas. Permanent road width would be about 36 feet,

with 8 feet on either side to be reseeded but retained for future use, as needed. Turns and curves would be wider to allow passage of large vehicles.

Lighting and security would also introduce new visual features into the landscape. The FAA requires aircraft warning markings on all structures taller than 200 feet. Once the TWP layout is finalized, a Project Lighting Plan would be developed. Aviation warnings for a wind energy project would most likely include medium-intensity red strobe warning lights placed on the nacelles of the turbines on each end of a turbine string, as well as on every third or fourth turbine. Once the exact marking plan is developed, it would be submitted to the FAA for review. Other than aviation lighting, outside lighting is not proposed due to the remote location. In addition, security fencing would be installed in accordance with the Applicant's fencing plan and BLM requirements.

Direct and Indirect Impacts

VRM procedures, as described above, provide the means to evaluate, mediate, and mitigate the impacts of the introduced elements of the Project on the existing landscape, and they are an important part of decision making to evaluate any modification of the BLM landscapes for wind energy development (BLM, 2005).

The TWP would involve installation of up to 40 large WTGs which depending on the model selected, could range from 389 to 489 feet from tower base to blade tip. Due to the number, height and industrial appearance of the proposed wind turbines, as well the Project area's predominantly rural, open and undeveloped context, observers of the landscape as visually incongruous, or industrial in appearance. As described in the Environmental Setting (Section 3.18), and shown in Figure 3.18-1, the proposed TWP could be seen from a large area, owing primarily to the height of the wind towers. Other visual features of the Project, such as site access roads, security fencing, and other ancillary facilities (such as the SCADA and fiber optic communication systems) would only be noticeable from a much closer range.

Affected Viewers

Visual resource impacts are highly dependent on the location and distance from which the Project would be seen, in addition to public sensitivity levels to visual change or contrast. Recreational users on BLM land, for example, are more likely to notice and negatively perceive the proposed Project than a motorist on a distant regional route. The closest populated area to the TWP is the small community of Willow Springs, located about nine miles to the east and southeast, and the City of Rosamond, located approximately 15 miles to the east. The primary regional roadways from which the Project could be visible are State Route 14 (SR 14), located approximately 15 miles west; and State Route 58 (SR 58), located approximately 12 miles south. Annual Average Daily Traffic (AADT) on these roadways is 17,600 vehicles and 14,000 vehicles, respectively. The closest local paved roadway is located five miles to the south (intersection of Rosamond Boulevard and 170th Avenue). Closer to the Project site, roads are generally unpaved and scarcely traveled. Therefore, the visual impact of the TWP for these public viewers would generally be minor, and primarily be limited to distant, background views which tend to be dominated by the scenic backdrop of the Tehachapi Mountains.

Views from the Pacific Crest Trail (PCT), which passes alongside the Project boundary in a northerly direction, would be very prominent and in the foreground distance zone. Figure 3.18-1 shows the PCT, including portions of the PCT from which the TWP might be visible. The PCT spans from Mexico to Canada through California, Oregon and Washington, and is designated as a National Scenic Trail under the National Trails System Act of 1968. Users of the PCT are highly sensitive to visual changes because expectations for scenery and natural views are high.

There are no official use estimates for the section of the PCT located near the Project area, but users can generally be categorized as section hikers (those hiking only a portion of the PCT, or using it for a day hike), or "through" hikers (those hiking the entire length of the PCT, from Mexico to Canada). Peak season of use for section hikers is late spring and fall, and peak period for through hikers (who typically hike from south to north) is late May.

There are no camping areas, BLM long term visitor areas, or other BLM-administered recreational facilities in the vicinity of the Project.

Construction Impacts

During construction, there are several possible sources of visual impacts. Road development may introduce strong contrasts in the landscape, depending on the route relative to surface contours and the width, length, and surface treatment of the roads. The TWP proposes to collocate the access roads and electrical collection system, which would reduce the amount of ground clearing necessary for construction. Conspicuous and frequent small-vehicle traffic for worker access and frequent large-equipment (trucks, graders, excavators, and cranes) traffic for road construction, site preparation, and turbine installations are expected. Both would produce visible activity and dust in dry soils. Suspension and visibility of dust would be influenced by vehicle speeds and road surface materials. As discussed above, with the exception of users of the PCT, public views of TWP construction would be limited to distant, background views which tend to be dominated by the scenic backdrop of the Tehachapi Mountains. The impacts would also be temporary and limited to the four-month construction period.

As discussed in Chapter 4.2, Air Resources, Mitigation Measure AIR-1 requires a number of measures and performance standards to be met that would substantially limit the amount of visible dust that would be generated by Project construction. Such measures include a vehicle speed limit of 15 miles per hour, frequent (i.e., at least three times a day) watering or application of a chemical stabilizer/suppressant on unpaved surfaces, and a requirement to stop work if visible dust exceed 20 percent opacity. These measures would substantially limit the amount of visible dust generated during the construction period. In addition, Mitigation Measure AIR-2 would be implemented to reduce exhaust emissions and would likewise reduce the level of visible exhaust plumes that may be generated by large cranes or self-erection apparatus used to mount towers, nacelles, and rotors.

Besides the potential for visible dust plumes, the presence of construction equipment, site activity, and ground clearing would result in visual impacts that produce contrasts of color, form, texture and line. Excavating for turbine foundations and ancillary structures; trenching to bury

electrical distribution systems; grading and surfacing roads; clearing and leveling staging areas; and stockpiling soil and spoils could damage or remove vegetation and expose bare soil. In relatively flat areas that would not be occupied by permanent structures, clearing would only involve cutting shrubs near the base and leaving the root structure in the ground to minimize soil disturbance. In addition, excavated topsoil would be stockpiled during grading and affected areas would be reseeded after construction is complete. A Construction Reclamation Plan would be prepared to address regrading and revegetation of areas temporarily disturbed by construction. The visual impacts of construction would be temporary (i.e., approximately four months), and implementation of Mitigation Measures AIR-1, AIR-2, and Project plans to minimize ground disturbance (by leaving topsoil and root structures in place) and implement a Construction Reclamation Plan would ensure that adverse visual impacts are reduced to a moderate level.

Operation and Maintenance Impacts

Visual Contrast Analysis

In order to capture representative viewpoint for the affected viewers in the vicinity, three KOPs were selected by a team of visual resource management specialists from the BLM. Figure 3.18-1 shows the location of the three KOPs, and Figures 4.18-1 through 4.18-3 present both the existing and simulated conditions for each viewpoint. Documentation of the visual contrast ratings (BLM Form 8400-4, Visual Contrast Rating Worksheet) is included in Appendix G, and summarized below in Table 4.18-3.

As shown in KOPs 1 and 2, the TWP would result in weak to moderate visual contrast for motorists on public roads, and the viewers located in Rosamond. Several factors diminish the potential for the general public to experience adverse visual impacts of the TWP. Firstly, due to the great distance, atmospheric conditions, topography and intervening structures, the TWP would not be visible or perceptible from many places within the affected communities and for much of the length of major roadways. Secondly, in areas where the TWP would be technically visible, the size and dominance of the WTGs would be minor, and the TWP would appear in the context of many existing WTGs in the general area, such that a casual observer may not notice or negatively perceive the addition of 40 WTGs, especially from the distances viewed. Lastly, the WTGs, as viewed from local roadways and developed communities, are backed by the much taller Tehachapi Mountains, such that towers or blades would not silhouette against the sky (i.e., protrude above the horizon line into the sky). While the wind turbines would be visible from a large area, because most public viewers are so distant from the site (greater than five miles), and because the base of the mountains already contain numerous wind turbines, the Tehachapi Mountains largely remain the focus of viewer attention and the TWP would not dominate or substantially change the existing landscape character.

TABLE 4.18-3
VISUAL CONTRAST RATING SUMMARY

ID	Name	Form	Line	Color	Texture	Contrast Summary
KOP 1	Rosamond City Center	Moderate	Weak	Weak	Moderate	Due to distance and screening elements, much of the visual contrast would be difficult to perceive. The WTGs would be visible, but so diminished in the scene that they would not attract attention. The Tehachapi Mountains would dominate the background view, and view of the WTGs is partially blocked by foreground elements such as structures, fencing and utility lines. The WTGs would not silhouette against the sky, and hazy conditions would further mute the facility contrast.
KOP 2	Rosamond Road	Moderate	Moderate	Weak	Moderate	The distance to the TWP WTGs and the presence of other existing WTGs generally minimizes the visual contrast that would be perceived by a casual observer. There are few foreground elements to block views of the TWP, and the portion of the horizon line occupied by turbines increases to take up almost the whole view. However, the TWP does not strongly attract attention and may be overlooked because the WTGs appear small, would not silhouette against the sky, and merely add to the existing wind turbines evident in the landscape.
KOP 3	Pacific Crest Trail	Moderate	Moderate	Moderate	Moderate	From a closer distance (approximately 1.1 miles), the WTGs would be clearly visible, although they would appear in the context of pre-existing WTGs, which would diminish the visual contrast of the TWP in the scene. Nevertheless, the form, line, color and texture of the TWP would stand in contrast to the predominant landscape character. The existing collection of wind turbines would remain dominant in the scene. The WTGs associated with the TWP would be noticed, and may attract attention, but would not by themselves demand the attention of a casual observer or be dominant in the scene.

The most severe visual contrast, however, would occur from the PCT, whose course extends between the proposed WTGs. In addition to being the most proximal public viewpoint, users of the PCT are likely to be the most sensitive to changes in the natural and scenic landscape. A representative view is provided in KOP 3, though the TWP would be visible from a substantial length of the trail, as hikers ascend or descend the Tehachapi Mountains into the valley below. From KOP 3, the visual contrast is moderate, primarily because the proposed WTGs are located over one mile away, and further from the observer than the collection of existing WTGs in the view. Absent of existing WTGs, the contrast would be strong, and the TWP would demand visual attention.

Elsewhere along the PCT, especially along the western-most parcel, there is a chance that the proposed WTGs would protrude above the skyline of either the distant horizon (for hikers going south), or the Tehachapi Mountains (for hikers going north). From these locations and for momentary periods, the visual contrast is likely to be strong, and the TWP would be a dominant

feature of the landscape for hikers on the PCT. However, because such an impact would occur only during the period when users are in close proximity to the TWP, and because the general foothills region is already heavily impacted by wind energy developments, the visual impact of the TWP would be moderate. Therefore VIS-1, VIS-2, and VIS-3 are proposed, which contain a number of specific measures to reduce the impacts of the TWP on affected viewers. As seen in the simulations, particularly from KOP 3, the size and shape of the WTGs produce a visual contrast in the landscape that cannot be fully eliminated. Even with implementation of VIS-1, VIS-2, and VIS-3, visual impacts would remain moderately adverse because the area contains numerous existing WTGs and the general character of the landscape is partially retained.

With implementation of VIS-1, VIS-2, and VIS-3, the TWP would be consistent with VRM Class III objectives, but not with VRM Class II.

Glint, glare, and shadow flicker

Interposition of WTGs between observers and the sun, particularly in the early and late hours of the day and during the winter season when sun angles area low, could produce a strobe-like effect from flickering shadows cast by moving rotors onto the ground. At its most severe, shadow flicker would be temporary and limited to the daylight hours. In addition, rotor blades may produce glint or glare depending on the specific color treatment used. Perception of blade glint would depend on the orientation of the nacelle, angle of the rotor, and the location of the observer relative to the position of the sun. Because the there are no paved public routes or communities in proximity to the TWP, very few observers are likely to be exposed to the effects of shadow flicker, but glare produced by the wind tower may nevertheless momentarily increase the visual contrast of the TWP over a wide area. Users of the PCT may momentarily experience shadow flicker if using the PCT in the late afternoon. Implementation of VIS-1 and VIS-2 would aid in reducing glare but would not be able to reduce or eliminate shadow flicker. Because shadow flicker would be only experienced by a small number of people (hikers on the PCT) and only momentarily under very specific viewing conditions, the impact would be temporary and minor despite PCT users' sensitivity to visual impacts.

Aviation Lighting

Because the TWP would utilize existing off-site infrastructure and substation, and because outside lighting of the wind turbines (beyond FAA requirements) is impractical due to the remote location of the Project site, no site security lighting would be used. However, FAA aviation safety rules would require lights mounted on nacelles that flash white during the day and twilight (20,000 candella), and red at night (2,000 candela). White lights would be less obtrusive in daylight, but red lights would likely be conspicuous at great distances against dark skies. The medium-intensity red strobe warning lights would be placed on the nacelles of the turbines on each end of a turbine string, as well as on every third or fourth turbine. Although these beacons would concentrate lights in a horizontal plane, they would increase the visibility of the turbines, particularly in the dark nighttime sky conditions typical of rural areas. These beacons would not contribute to "sky glow" resulting from artificial lighting due to their intermittent operation. Observers of the TWP may notice the additional warning lights, but the prominence of these

additional lights in the scene would be minor compared to the number and coverage of existing lights in the foothills region of the Tehachapi Mountains.

Decommissioning Impacts

During decommissioning, impacts on visual resources would be similar to those encountered during construction. These impacts are related to road redevelopment/reclamation, work site fencing, removal of buried structures and equipment. Visual deconstruction impacts of heavy equipment, support facilities, and lighting would be substantially the same as those in the construction phase. Restoring a decommissioned site to pre-project conditions would entail recontouring, grading, scarifying, seeding and planting, and possibly stabilization of disturbed surfaces. Newly disturbed soils would create a visual contrast that would persist at least several seasons before revegetation would begin to restore past activity.

Impacts to Special Designations (Wilderness Areas)

Based on the Project's viewshed, the Project site would not be visible from designated wilderness areas.

Consistency with Local Regulations and Ordinances

The TWP would be consistent with the policies associated with aesthetics (including allowable heights, electrical system undergrounding, signage and reflective surfaces) contained in Chapter 19.64 of the Kern County Zoning Ordinance. The TWP is within an area zoned as the Kern Wind Energy (WE) Combining District, and is consistent with setback requirements. The closest WTG to the Pacific Crest Trail is located approximately 500 feet east of the trail corridor, which is beyond the Kern County setback requirement of one times machine height, limited to 500 feet.

Summary and Conclusion

Project construction, operation and maintenance, and decommissioning would result in moderate adverse visual resource impacts. While sensitivity to visual impacts for users on the nearby PCT is high, the development would occur in a visual context already containing a large number of wind energy developments, diminishing somewhat the negative visual impact that is likely to be perceived. Due to the height of the WTGs, the viewshed of the TWP is vast; however, major public roads and developed communities are located at a great enough distance from the Project that WTGs are located in background views, and have minimal visual impacts, particularly because of distance, topographic screening, and the TWPs location within other existing wind energy facilities.

4.18.3 Alternative 2 - Modified Proposed Action (37 WTGs)

Selection of this alternative would result in decreased impacts than the Proposed Action. This alternative would eliminate the western-most parcel from the Project, and would result in three fewer wind turbines. The eliminated parcel is located along the PCT, and therefore the impacts to the PCT would be reduced as the next nearest parcel to the PCT is approximately one mile east. Visual impacts on the PCT view corridor would remain, but would be substantially diminished and the potential for shadow flicker from the WTGs closest to the PCT would be eliminated. All

other types of visual impacts, such as during construction, for other public viewers (i.e., motorists and developed communities), and resulting from glint, glare and FAA lighting, would remain similar or be slightly reduced.

4.18.4 Alternative 3 - No Action Alternative

If this no action alternative were selected, none of the anticipated visual resources impacts of the Proposed Action would occur. Instead, the land on which the TWP is proposed would become available to other uses consistent with CDCA Plan use opportunities. Thus, there would be no direct or indirect impacts to visual resources.

4.18.5 Alternative 4 - No Project; Unsuitable

If this alternative were selected, none of the anticipated visual resources impacts of the Proposed Action would occur and the CDCA Plan would be amended to make the site unavailable for future wind energy development. Other use opportunities consistent with the CDCA Plan would remain available. Generally, there would be no direct or indirect impacts to visual resources.

4.18.6 Alternative 5 - No Project; Suitable

If this alternative were selected, of the anticipated visual resources impacts of the Proposed Action would occur, but the BLM would amend the CDCA Plan to allow for other wind energy projects on the site. As a result, visual resources may be impacted to the same degree and extent as the Proposed Action if future wind energy development were to occur.

4.18.7 Cumulative Impacts

Geographic Extent/Context

The geographic scope of the cumulative effects analysis for visual resources consists of the outer extent of the Project viewshed, which is a radius of 15 miles away from the outer edges of the Project footprint. Potential cumulative effects on visual resources could occur during the proposed construction period (e.g., from cumulative construction disturbances), during the 30-year term of the authorizations and permits for the Proposed Action (e.g., project contrast with the landscape, glint and glare), or result from closure and decommissioning (e.g., until restoration efforts return the landscape to its original condition). Cumulative visual impacts could occur as long as the TWP contributes to visual changes to the landscape that are visible or perceived by the public, either within the same viewpoints, or as a noticeable element in a cumulative viewing experience (i.e., a hike along the PCT, a drive on regional highway or a local road).

Existing Cumulative Conditions

Existing conditions within the area of cumulative effects analysis reflect a combination of the natural condition and the effects of past actions and are described in Chapter 3. Direct and indirect effects of the TWP are analyzed above. Past, present, and reasonably foreseeable future actions making up the cumulative scenario are identified in Section 4.1. Currently, the MWEP and PWEP have been completed, and have thereby added large scale wind development to the Project

viewshed. In the greater vicinity, numerous renewable energy developments have been installed, are planned for installation, or are under construction. This includes several recently constructed large transmission line projects such as SCE's Tehachapi Renewable Transmission Project and Antelope Transmission Project Segments 1-3.

Reasonably Foreseeable Projects

There are five reasonably foreseeable future projects surrounding the TWP site: Manzana Wind Energy Project, Pacific Wind Energy Project, Alta-Oak Creek Mojave Project, Catalina Renewable Energy Project, and the Tehachapi Renewable Transmission Project (TRTP). The Manzana Wind Energy Project is located on a 5,820-acre property directly north of the proposed Project property and includes installation of up to 300 wind turbines to generate up to 300 MW of electricity. The Alta-Oak Creek Mojave Project will provide up to 800 MW of installed wind energy capacity on an approximately 9,300-acre property located directly north of the proposed Project property. The proposed Catalina Renewable Energy Project is located adjacent to the western boundary of the proposed Project property and proposes to install 200 MW of wind energy and 150 MW of solar energy on portions of a 6,739-acre property. The Pacific Wind Energy Project is located on an 8,300-acre property directly north of the proposed Project property, and includes the installation of up to 300 wind turbines to generate up to 151 MW of electricity. The Pacific Wind Energy Project EIR was certified in October 2010.[3] Other projects that have not yet been approved may not appear in this analysis. The TRTP is a transmission line and substation facilities. The Final EIR for the TRTP was approved on December 17, 2009 and construction of the project began in fall 2010 and is expected to end in 2015.

Construction, Operation and Maintenance, Decommissioning

The cumulative impact of the projects identified would gradually change the visual character in the Project area as they are developed. It is anticipated that these projects would be designed to include architectural and landscape design features in accordance with the standards and design guidelines set forth in each respective jurisdiction (i.e., Kern County, BLM-administered lands, etc.). In addition, where CEQA or NEPA review determines that potentially significant impacts may occur, mitigation measures or alternatives must be explored to address such impacts. The BLM's threshold for identifying a major adverse impact is the degree to which a project, or a combination of projects, alters the existing character of the landscape. This is determined by an evaluation of the visual contrast of a project within the landscape. The analysis of the TWP alone concluded that the impact (i.e., visual contrast) of the project is moderate. However, the primary reason that the impact is moderate (as opposed to strong/major) is because the existing cumulative conditions are of a landscape heavily modified by existing wind energy development. The visual impact in the existing cumulative context is major because wind energy has substantially modified the character of the landscape. The wind towers are dominant in the landscape and will not be overlooked, particularly for users of the PCT.

[3] Kern County. August 2010. *Pacific Wind Energy Project Final Environmental Impact Report*. Prepared by: County of Kern Planning Department, Bakersfield, CA, with technical assistance by Aspen Environmental Group, Agoura Hills, CA.

Recreational Users on Pacific Crest Trail

Recreational users on the PCT could experience both additive and synergistic impacts in the cumulative scenario. The Proposed Action, along with other projects in the cumulative scenario, would result in direct visual alteration to views towards and from BLM wilderness areas and the scale and contrast created by numerous energy projects would greatly alter views from the trail. Existing cultural modifications in the Project area are largely limited to linear alignments (e.g., roads and transmission lines), or other structures that are diminished in importance due to the considerable distance from which they are viewed. However, the cumulative scenario presents numerous large-scale wind energy projects that would be readily apparent to most PCT users. Implementation of the Proposed Action, in combination with other projects, would make the surrounding area appear increasingly industrialized, and could substantially diminish the remote and isolated character of the landscape.

Available mitigation measures would not feasibly reduce the scale and contrast created by the projects in the cumulative scenario, especially from viewpoints associated with the PCT. Thus, the cumulative scenario presents an unavoidable and adverse impact for dispersed recreational users on PCT.

4.18.8 Mitigation Measures

In accordance with CEQ guidance and BLM NEPA Handbook §6.8.4, reasonable, relevant mitigation measures that could improve a proposed Project can be applied to reduce or eliminate adverse impacts whether or not the impacts are "significant" as that term is defined by NEPA. Project impacts could be reduced by the implementation of Mitigation Measures VIS-1 through VIS-4 below.

VIS-1: Project Design, Building, and Structural Materials. Visual design elements shall be integrated into the construction plans, details, shop drawings and specifications; these shall include, but not be limited to, grubbing and clearing, vegetation thinning and clearing, grading, revegetation, drainage, and structural plans. Visual design elements within the plans shall be measureable and monitored while under construction, while operational, and when decommissioned. The plans shall include a monitoring and compliance plan that establishes the monitoring requirements and thresholds for acceptable performance. A careful study of the site shall be performed to identify appropriate colors and textures for materials; both summer and winter appearance shall be considered as well as seasons of peak visitor use, particularly along the Pacific Crest Trail. Visual design elements to be integrated into construction plans, details, shop drawings and specifications must, at a minimum, include:

1. Wind generator machine and associated meteorological tower overall height shall not exceed six hundred (600) feet, and no WTG shall be erected within 150 feet of the Pacific Crest Trail easement.

2. The Applicant shall identify construction laydown areas using already disturbed and/or are in locations of low visual sensitivity.

3. Vegetation and ground disturbance associated with the WTGs, access roads, 34.5-kV underground electrical collection system, and the perimeter fencing shall be minimized and take advantage of existing clearings wherever feasible. Disturbed surfaces shall be restored as closely as possible to their original contours and revegetated immediately after, or contemporaneously with construction. Action shall be prompt to limit erosion and to accelerate restoring the preconstruction color and texture of the landscape.

4. Dust suppression techniques shall be employed to minimize impacts of vehicular and pedestrian traffic, construction, and wind on exposed surface soils.

5. All internal access roads 16 feet or wider, graveled surfaces, areas to be permanently cleared of vegetation, and (if applicable) cut slopes shall be treated with rock stains or other color treatment appropriate with the surrounding landscape. To the extent possible, roads shall not be constructed along ridgelines, which would create great visual contrast and possible erosion.

6. Openings in vegetation for facilities, structures, roads, and other temporarily disturbed areas (e.g., for the underground electrical collection system, work areas, and temporary roads), shall be feathered and shaped to repeat the size, shape, and characteristics of naturally occurring openings in the Project vicinity

7. Security fencing shall be coated with black poly-vinyl or other visual contrast reducing color.

8. Materials, coatings, or paints having little or no reflectivity shall be used whenever possible. Towers and blades shall be painted a nonreflective, unobtrusive color or have a non-reflective surface. The choice of color treatments shall be based on the appearance at typical viewing distances and consider the entire landscape around the proposed development as it would be viewed from publically accessible locations. Appropriate colors for smooth surfaces often need to be two to three shades darker than the background color to compensate for shadows that darken most textured natural surfaces. Choice of colors shall be made from the BLM Standard Environmental Color Chart CC-001 in consultation with a BLM landscape architect or other designated visual resource specialist. Surface treatments must be consistent with FAA air-safety requirements and shall promote visual uniformity with surrounding wind projects. WTGs should have visual uniformity in the shape, color, and size of rotor blades, nacelles, and towers with surrounding WTGs. Commercial messages on turbines and towers are prohibited.

9. One (1) Project identification sign, located at each point of Project ingress and egress, not to exceed thirty-two (32) square feet in area, may be erected on the Project site. No other signs shall be installed other than safety signs and the required warning signs. The developer shall submit a sign elevation drawing to the Kern County Planning Director for review and approval prior to installation.

10. The wind development site shall be maintained during operation. Inoperative turbines should be completely repaired, replaced, or removed. Wind energy projects should evidence environmental care. Facilities and off-site surrounding areas should be kept clean of debris, trash or waste, and graffiti. Scrap heaps and material dumps shall be prohibited and prevented. Materials storage yards should be kept to a minimum. Surplus, broken, disused materials and equipment of any size should not be allowed to accumulate.

11. An aesthetic offset should be considered along the eastern boundary of the western-most parcel. Due to the visual impact resulting from WTGs being placed in close vicinity of the PCT, an interpretive sign could be considered along the PCT. The interpretive signs should be low in profile and describe the history and other educational information regarding alternative energy projects and the winds of Tehchapi Pass.

VIS-2 Reduction of Visual Light and Glare. Prior to the issuance of grading or building permits by the County and/or a Notice to Proceed from the BLM, the Applicant shall provide evidence of the following:

1. The Applicant shall submit to the BLM for review and approval a lighting mitigation plan that includes the following:

    a. Location and direction of light fixtures that take the lighting mitigation requirements into account;
    b. Lighting design that considers setbacks of project features from the site boundary to aid in satisfying the lighting mitigation requirements;
    c. Lighting shall incorporate fixture hoods/shielding, with light directed downward or toward the area to be illuminated;
    d. Light fixtures that are visible from beyond the project boundary shall have cutoff angles that are sufficient to prevent lamps and reflectors from being visible beyond the Project boundary, except where necessary for security;
    e. All lighting shall be of minimum necessary brightness consistent with operational safety and security; and
    f. Lights in high illumination areas not occupied on a continuous basis (such as maintenance platforms) shall have (in addition to hoods) switches, timer switches, or motion detectors so that the lights operate only when the area is occupied.

VIS-3: Screening and Restoration. The Applicant shall continuously comply with the following:

12. All operation and maintenance areas shall be kept clean and tidy by storing all equipment, parts, and supplies in areas that are screened from view and/or are generally not visible to the general public.

13. The Applicant shall remove derelict wind turbine generators and derelict parts and pieces within 60 days of decommissioning, and shall relocate such equipment, derelict parts and pieces to an area that is screened from view and/or is not visible to the general public.

14. c. The Applicant shall re-vegetate disturbed soil as specified in the approved Habitat Restoration and Re-vegetation Plan.

VIS-4: Evaluate and Implement PCT Route Enhancement. In order to mitigate for impacts that do not substantially interfere with the nature and purpose of the PCT, the Applicant shall consult and coordinate with the U.S. Forest Service, the BLM, and the Pacific Crest Trail Association to develop an off-site mitigation plan for the PCT. The plan shall be submitted for review and approval to the BLM and U.S. Forest Service prior to BLM issuing a Notice to Proceed and commissioning of the wind turbines. The plan shall identify feasible land acquisition opportunities to protect the PCT corridor and to improve the PCT recreation and scenic opportunities commensurate with the recreation and visual impacts. The provisions shall be designed to apply to those areas where the project would be most visible from the existing trail. If directed by the BLM, in consultation with the U.S. Forest Service, the ApplicantApplicant shall provide funds for acquisition within one year of issuance of the wind turbine generator building permit.

Land acquisition will be based on the concepts developed in the *Draft Pacific Crest National Scenic Trail Best Management Practices to Mitigate Scenery Impacts from Conflicting Land Uses* (USFS, BLM June 2012). Under these Best Management Practices (BMP), the mitigation ratio for land acquisition is calculated by using the distance of the project from the PCT, the distance along the trail that the project is visible to trail users, and the contrast created by the project to the characteristic scenery. Under the preferred alternative, the project is immediately adjacent to the trail at its closest point (foreground distance zone), is visible to trail users for approximately 21.5 miles (foreground-background distance zones), and creates a moderate to high contrast to the characteristic scenery. Using this scenario, the ratio for land acquisition would be 1:1. Thus, the acres to be acquired off-site for mitigation to impacts to 1,207 acres would be 1207 acres.

4.18.9 Residual Impacts after Mitigation Measures

As seen in the simulations, particularly from KOP 3, the size and shape of the WTGs produce a visual contrast in the landscape that cannot be fully eliminated. Even with implementation of VIS-1, VIS-2, and VIS-3, visual impacts would remain moderately adverse. The impact because the area contains numerous existing WTGs and the general character of the landscape is partially retained. See Chapter 4-15 Special Designations for an explanation for residual impacts of the land acquisition for the mitigation for the PCT.

4.19 Impacts on Water Resources

4.19.1 Methodology for Analysis

This analysis is based, in part, upon information from the following sources: the Plan of Development for the Tylerhorse Wind Energy Project (TWP) (BLM, 2011), and the Hydrology Study that was completed in support of the Proposed Action (Pinnacle, 2011). Additionally, available flood, groundwater level, and water quality data were reviewed as available (DWR, 2011). The impact assessment provided below draws on these information sources, as combined with a close evaluation of onsite conditions, in order to arrive at the potential impacts and associated mitigation, as relevant.

4.19.2 Discussion of Direct and Indirect Impacts

Alternative 1 - Proposed Action (40 WTGs)

Surface Water Drainage

With respect to total overall flows, the Proposed Action would result in the installation of only minimal areas of new impervious surfaces. Impervious surfaces result in reduced infiltration to groundwater, and can result in increased stormwater runoff rates. The proposed access roads would be unpaved, and therefore would not be considered impervious. Minor areas of new impervious surfaces would be installed, associated with the proposed wind turbine towers. However, these would be minimal in extent in comparison to the remaining area of pervious surfaces in adjacent areas, and would not result in noticeable increases in stormwater flows. Therefore, potential for increases in stormwater volumes on site is considered to be minimal.

The proposed access roads would cross numerous drainage courses of varying magnitudes. These drainages may be contained within an eroded channel, or may otherwise be minimally defined. Figure 4.19-1(see Appendix A) shows tributary areas for watercourse crossings of proposed access roads. Mitigation of storm water requires quantifying the volume and rate of runoff through hydrologic calculations. As is typical of alluvial fans, a significant portion of the Project property lacks well defined channels of sufficient cross-section to carry the 100-year, or even the 10-year storm event. It is generally acknowledged that “less defined” channels in alluvial fans are unstable since they have limited capacity, and may change direction in a major storm event due to deposition of sediments and erosion.

In areas without defined channels, storm water would primarily intercept the proposed access roads in the form of overland flow. In some areas, access roads may be designed to allow overland flow to pass across the roadway without a defined channel. In this case, it is desirable to keep storm water in an unconfined and low velocity state (as overland flow), to minimize erosional processes associated with channelized flow in loose surficial sediments. Alternatively, overland flow intercepting access roads can be collected in roadside ditches on the upstream side, and carried in the ditch to either a culvert crossing or an at-grade crossing. In this case, the

quantity of flow to each culvert is directly related to the roadway profile. In other words, the storm water flow to each culvert is related to the frequency of sags and crests in the roadway profile. Over the same horizontal road alignment, a profile that designs a sag (and culvert) every ¼ mile would result in a larger storm water flow through the culvert than a profile with a sag every 1/8 mile.

A preliminary hydrologic survey and model of the TWP area was completed by Pinnacle (2011) in support of this EIS. The following text provides a discussion of the analysis that was completed in support of the Proposed Action, and also provides an impact assessment and mitigation measures.

The calculations herein determine storm water runoff for the 10- year and 100-year storm events for all defined channels at road crossings. Quantification of these flows is necessary to determine appropriate mitigation, as well as proper design of both culverts and at-grade crossings.

The modeled analysis (Pinnacle, 2011) utilized the Synthetic Unit Hydrograph Method, as prescribed in the Kern County Hydrology Manual and as recommended by Kern County engineers, to determine storm water flows for the 10-year and 100-year events. The computer software CIVILCADD/CIVILDESIGN, Version 7.0 (2004), was used to facilitate on site stormflow modeling and calculations. In addition, the United States Geodetic Survey (USGS) Magnitude and Frequency Method was used to estimate storm water discharge for tributary areas greater than 100 acres. This method was performed only for the basis of comparison, and to provide a level of confidence with the Synthetic Unit Hydrograph Method.

Table 4.19-1 shows the calculated storm water discharge generated from the 10-year and 100-year events for each water course crossing of a proposed access road. Table 4.19-1 also shows calculated culvert sizes for each crossing. Table 4.19-2 shows culvert sizes as well as detailed culvert hydraulics. The basin sub areas within the Project action areas in Tables 4.19-1 and 4.19-2 are shown as project access roads in relation to ephemeral drainages on Figure 4.19-1. Although preliminary culvert sizes are provided here, it is anticipated that many drainage crossings would ultimately be at-grade, rather than pipe culverts. Calculations to size culverts assumed pipes were set at the natural slope of the watercourse, and in accordance with Kern County criteria, which require culverts to convey the 10- year storm event, under existing conditions, without the water surface exceeding the soffit of the culvert. In addition, Kern County Standards permit the 100-year storm event to overtop the roadway at culvert locations, as long as the specific energy of the flow does not exceed 1.5 feet in depth.

As discussed above, the proposed drainage crossings by roads would be sized appropriately so as to be able to handle flows onsite, in accordance with relevant local standards for the design of stormwater conveyance facilities. Adhering to design standards would ensure that stormwater flows on site would not overwhelm proposed facilities, resulting in damage to facilities, washout, or other unintended effects.

TABLE 4.19-1
MODELED DISCHARGE FOR ACTION AREA WATERSHEDS

				Frequency-Magnitude Method		Unit Hydrograph Method						
Sub-Area	**Crossing #**	**Total Tributary Area (Acres)**	**Total Tributary Area (Square Miles)**	**Flow, 10 Yr Event (cfs)**	**Flow, 100 Year Event (cfs)**	**Length Drainage Course (ft)**	**Length-Centroid (ft)**	**Elev. Change (ft)**	**Flow, 10 Yr Event (cfs)**	**Flow, 100 Year Event (cfs)**	**Culvert Size (10 yr event)**	**Notes**
A	1	132	0.21	65	341	5,375	2,640	370	246	434	(3) 54"	
B	2	100	0.16	56	279	8,590	4,445	860	151	268	(3) 42"	
C	3 & 4	218	0.34	85	492	15,150	8,175	975	248	444	(3) 54"	
D	5 & 6	2,925	4.57	336	3,275	37,590	16,790	4,320	2,372	4,277	-	1
E	7 & 8	215	0.34	84	487	8,890	3,865	700	323	574	(3) 60"	
F	9 & 10	2,345	3.66	299	2,787	30,335	12,100	2,680	2,033	3,661	-	1
G	11 & 12	470	0.73	127	862	16,580	6,230	1,670	623	1,109	(4) 72"	
H	13	1,792	2.8	259	2,290	24,380	10,640	2,450	1,734	3,116	-	1
I	-	250	0.39	91	544	7,720	4,585	520	384	681	-	1
J	-	167	0.26	74	405	5,850	3,205	340	278	492	-	1

Source: Pinnacle, 2011; Note 1: Indicated crossing is a candidate for a major at-grade (culvertless) crossing.

TABLE 4.19-2
CULVERT SUMMARY FOR ACTION AREA DRAINAGES

Sub-Area	Crossing #	Flow, 10-Yr (cfs)	Pipe slope (ft/ft)	Pipe diameter (in.)	# of Barrels	Dn (inches)	Vn (f/s)	Dc (inches)	Vc (ft/sec)	Flow regime
A	1	246	0.034	54	3	21.98	13.5	31.92	8.4	Supercritical
B	2	151	0.027	42	3	20.21	11	26.82	7.7	Supercritical
C	3 & 4	248	0.027	54	3	23.54	12.4	32.06	8.4	Supercritical
E	7 & 8	323	0.022	60	3	27.45	12.3	35.64	8.9	Supercritical
G	11 & 12	623	0.026	72	4	29.45	14.3	40.8	9.4	Supercritical

Source: Pinnacle, 2011

While the proposed crossings would be sized according to local standards, additional changes to localized hydrologic processes could result due to installation of the proposed roads and associated crossings. As discussed previously, culverts result in the concentration of stormwater flows, followed by the discharge of often quickly moving, concentrated flows at the downstream end of the culvert. The release of concentrated flows onto unconsolidated, erodible sediments, such as those found on site, can result in increased erosion, as well as other issues such as head cutting, channel incision, sedimentation, and related issues during Project operation. These effects could potentially result in increased erosion and sedimentation on site. Additionally, unless carefully designed and installed, other proposed features such as turbine pads, turnaround areas, underground wiring, transformers, and other on site features could result in altered drainage patterns. Such changes could alter existing stormwater flow patterns on site, potentially leading to increases in localized on site ponding, erosion, or sedimentation. Implementation of Mitigation Measures WATER-1 and WATER-2 would be required, and would ensure that these effects are minimized. See Mitigation Measures in Section 4.19.44, below.

Flooding

As discussed in Section 3.19, the entire Project area has been mapped for FEMA flood hazards and no portion of the TWP area is located within a 100-year flood Zone “A”. Therefore, based on the flood hazards map, the TWP area is not anticipated to be subject to flooding associated with 100-year flooding events. Additionally, the Proposed Action would not result in the installation of any new facilities within a 100-year flood zone, such that interference with flood flows could result. Therefore, no impact would occur, and flooding is not discussed further. For a discussion regarding on site management of stormwater, please refer to the ensuing subsection regarding surface water drainage.

Surface Water Quality

Construction of the Proposed Action would include the use of heavy equipment for grading, trenching, laying of electrical lines, installing of wind turbines, installing of roadways, and the installation of other proposed facilities. Equipment may include bulldozers, graders, earth movers, heavy trucks, trenchers, and various other machinery. Pollutants associated with the use of construction machinery could be released accidentally during such activities. Such construction related pollutants could include, but would not be limited to, spilled fuels, oil, lubricants, antifreeze, or hydraulic fluid. Also, the use of heavy machinery would disturb surface sediments. During storm events, these potential pollutants, including sediment, could become entrained in stormwater runoff, and be transported into onsite waterways and transported downstream or offsite. As a result, during storm events, water quality could be reduced, or increased construction related erosion and sedimentation could occur on site or downstream. However, acquisition of coverage under the Construction General National Pollutant Discharge Elimination System (NPDES) permit would be required for the TWP area. Adherence to the conditions of this permit would include the application of Best Management Practices and other measures designed to minimize stormwater quality pollution during construction activities, in accordance with Regional Water Quality Control Board (RWQCB) policies and requirements. Therefore, potential impacts to water quality would be minimal, and no further mitigation would be required.

During operation, potential water quality issues associated with erosion and sedimentation would be minimized via the application of Mitigation Measures WATER-1 through WATER-3. Other potential operation period onsite contributions to water quality degradation could include accidental release of hazardous materials on site, such as oils, greases, paints, and other materials utilized on site, including for the onsite repair of existing facilities. Potential spills of such materials are addressed and mitigated in Section 4.11. No further mitigation is warranted. No on site wastewater disposal would occur.

Groundwater Supply and Levels

As discussed in Section 3.19, on site water use would be very minor. More specifically, construction related activities would result in water consumption rates of approximately seven acre-feet per year (AF/Y), while operation period water use would be approximately 2 AF/Y. These volumes of water would not be withdrawn from any on site groundwater wells, but would instead be trucked in from offsite. The proposed offsite water supplies could potentially be derived from groundwater. However, because the proposed onsite water usage requirements are so minor, the proposed withdrawal rates of 7 AF/Y during construction and 2 AF/Y during operation would not be expected to result in substantial drawdown of groundwater levels at source wells. There would be no fire suppression tank onsite; water trucks for fire suppression will be stationed onsite. Therefore, only minimal to negligible drawdown would occur, existing groundwater supplies would not be noticeably affected, and no mitigation is warranted.

Alternative 2 - Modified Proposed Action (37 WTGs)

Implementation of Alternative 2 would result in a slightly reduced Project footprint, in comparison to the Proposed Action. Specifically, Alternative 2 would result in temporary disturbance of 159 acres (rather than 171 acres for the Proposed Action), and permanent disturbance of 23 acres (rather than 24 acres) for the wind turbine component of the Project. Alternative 2 would, however, still result in the installation of new roads and other facilities, which would potentially interfere with on site drainage, erosion, and sedimentation, as discussed for Alternative 1. Therefore, Mitigation Measures WATER-1 through WATER-3 would be required. All other impacts would be similar to those discussed for Alternative 1, except somewhat reduced in intensity.

Alternative 3 - No Action Alternative

Under this alternative, the BLM would not approve the proposed TWP and would not amend the CDCA Plan. As a result, no wind energy project would be constructed, and the BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan. Because there would be no amendment to the CDCA Plan and no wind project approved for the site under this alternative, no new structures or facilities would be constructed or operated on the site and no new ground disturbance would occur. Therefore, none of the potential impacts discussed above for the Proposed Action would occur. Alternative 4: No Issuance of a

ROW Grant; Approval of a LUP Amendment Finding the Site Unsuitable for Wind Energy Development.

Alternative 4 - No Project; Unsuitable

Under Alternative 4, the BLM would not approve the proposed TWP and would amend the CDCA Plan to find proposed site unsuitable for wind energy development. As a result, no wind energy project would be constructed on the site, and the BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan. Therefore, none of the potential impacts discussed above in support of the Proposed Action would occur. Additionally, because the CDCA Plan would be amended to exclude future wind energy development, 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.

Alternative 5 - No Project; Suitable

Under Alternative 5, the BLM would not approve the proposed TWP, but would amend the CDCA Plan to find the site suitable for wind development. As a result, it is possible that another wind energy project could be constructed on the site in the future. Because the CDCA Plan would be amended, it is possible that the site would be developed with the same or a different wind technology. With respect to the Proposed Action, none of the potential impacts discussed previously would occur on site. However, since the land use plan would be amended to allow future wind development in the area, potential impacts similar to those described for the Proposed Action and could potentially occur at a later time and under the auspices of a different project.

4.19.3 Cumulative Impacts

Geographic Extent/Context

The geographic extent of this cumulative impacts analysis for water resources under the TWP and alternatives includes the Antelope – Willow Springs Watershed. This area is appropriate for the analysis of cumulative impacts because surface waters at the TWP site and all other existing/reasonably foreseeable projects within the Watershed boundary generally flow southeasterly towards the same point, (i.e., Rosamond Dry Lake). This area is also appropriate for the analysis of cumulative impacts to groundwater resources because the TWP site is located in the Antelope Valley Groundwater Basin, which is recharged, in part, by perennial surface waters generated within the Antelope – Willow Springs Watershed.

Existing Cumulative Conditions

The Antelope – Willow Springs Watershed encompasses the majority of the Tehachapi Wind Resource Area. Construction activities associated with the Manzana Wind Energy and Pacific Wind Energy Projects characterize the TWP's immediate surroundings. Overall, the watershed

area is largely vacant with only a few existing wind energy power plants, transmission lines and other sparse development such as roads, highways, residences and other structures.

Reasonably Foreseeable Projects

Table 4.1-1 provides a listing of current and 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 considered reasonably foreseeable. Table 4.1-2 specifically identifies the reasonably foreseeable projects that would be located within the geographic scope of this analysis.

Construction, Operation and Maintenance, Decommissioning

As discussed previously, the Proposed Action and Alternative 2 would result in minimal or mitigable direct effects with respect to water resources. When considered in light of other regional and relevant projects, implementation of the Proposed Action could contribute minor residual alterations to off- site hydrology, including erosion. Other cumulative projects considered in support of this analysis could result in similar effects on off-site hydrology. However, because the Proposed Action is not expected to result in increased stormwater or flood flows emanating from the TWP Area, it is anticipated that the effects of the Proposed Action would not meaningfully contribute to a downstream cumulative condition with respect to hydrology including flooding, erosion, and sedimentation.

With respect to flooding, the Proposed Action would not interfere with existing flood flows, and would not result in any interference with existing flood flows, which are located off site. Therefore, the Proposed Action would not contribute to any cumulative level impacts associated with flooding.

With respect to surface water quality, construction and operation of the Proposed Action could result in minor residual releases of construction related water quality pollutants, as well as operation period water quality pollutants associated with on site spills and other accidental releases. However, other regional projects considered in the cumulative analysis would presumably also be required to adhere to similar NPDES permitting requirements as compared to those discussed for the Project. Therefore, water quality emissions from other projects would also be minimized, and potential cumulative impacts are anticipated to be minor.

Finally, with respect to groundwater levels and supply, implementation of the Proposed Action would result in only very minimal withdrawal, if any, of groundwater. Even if other cumulative projects resulted in the withdrawal of groundwater, the Proposed Action's very minor withdrawals of 7 AF/Y during construction and 2 AF/Y during operation would not contribute to a cumulative groundwater impact. Therefore, potential cumulative impacts associated with implementation of the Proposed Action would be minimal.

4.19.4 Mitigation Measures

Implementation of Mitigation Measures WATER-1 through WATER-3 would require implementation of BMPs and other measures designed to minimize potential hydrology and erosion-related effects of installation of the Proposed Action, including implementation and adherence to the recommendations of a Comprehensive Drainage Plan and an Operations Period Drainage Maintenance Plan.

WATER-1: Implementation of a SWPPP: To ensure that stormwater quality is protected during the construction, operations, and decommissioning period for the TWP, the Applicant shall complete and implement a Stormwater Pollution Prevention Plan (SWPPP) for the TWP site that shall be in effect during all construction activities for the area and associated facilities. The SWPPP shall identify pollutant sources that may affect the quality of stormwater discharge and shall require the implementation of BMPs to reduce pollutants in storm water discharges.

BMPs may include, but would not be limited to:

1. If grading occurs during rainy season (October 15 to April 15), storm runoff from the construction area shall be regulated through a storm water management/erosion control plan that shall include temporary onsite silt traps and/or basins with multiple discharge points to natural drainages and energy dissipaters. Stockpiles of loose material shall be covered and runoff diverted away from exposed soil material. If work stops due to rain, a positive grading away from slopes shall be provided to carry the surface runoff to areas where flow would be controlled, such as temporary silt basins. Sediment basins/traps shall be located and operated to minimize the amount of off-site sediment transport. Any trapped sediment shall be removed from the basin or trap and placed in suitable location onsite, away from concentrated flows, or removed to an approved disposal site.

2. To minimize discharge of sediment during storm events, temporary erosion control measures (such as fiber rolls, staked straw bales, detention basins, check dams, geofabric, sandbag dikes, check dams, erosion control blankets, matting, and other fabrics or other ground cover as available) shall be implemented and remain in place until surface sediments can be stabilized.

3. Sediment shall be retained onsite by a system of sediment basins, traps, or other appropriate measures.

4. No disturbed surfaces may be left without erosion control measures in place during the rainy season (October 15 to April 15).

5. Erosion protection shall be provided on all cut-and-fill slopes, as relevant to the TWP, and shall be initiated as soon as possible after completion of grading and prior to the onset of rainy season (October 15 to April 15).

6. BMPs selected and implemented for the Project shall be in place and operational prior to the onset of construction on the site. The construction and decommissioning phase facilities shall be maintained regularly and cleared of accumulated sediment as necessary. Effective mechanical and structural BMPs that could be implemented at the Project site include the following:

    a. Mechanical storm water filtration measures, including oil and sediment separators or absorbant filter systems such as the Stormceptor system, shall be installed within the storm drainage system to provide filtration of storm water prior to discharge.

    b. Roof drains shall discharge to natural surfaces or swales where possible to avoid excessive concentration and channelizing storm water.

    c. Permanent energy dissipaters shall be included for drainage outlets.

    d. The water quality detention basins shall be designed to provide effective water quality control measures including the following:

        i. Maximize detention time for settling of fine particles;

        ii. Establish maintenance schedules for periodic removal of sedimentation, excessive vegetation, and debris that may clog basin inlets and outlets.

        iii. Maximize the detention basin elevation to allow the highest amount of infiltration and settling prior to discharge.

2. Hazardous materials such as fuels and solvents during construction shall be stored in covered containers and protected from rainfall, runoff, vandalism, and accidental release to the environment. All stored fuels and solvents shall be contained in an area of impervious surface with containment capacity equal to or greater than the volume of materials stored. A stockpile of spill cleanup materials shall be readily available at all construction sites. Employees shall be trained in spill prevention and cleanup, and individuals shall be designated as responsible for prevention and cleanup activities.

3. Equipment shall be properly maintained in designated areas with runoff and erosion control measures to minimize accidental release of pollutants.

4. Impervious surface areas shall be graded or constructed to drain to a filtration BMP or equally effective alternative.

5. Refueling of vehicles shall not occur within 50 feet of a mapped watercourse, as shown in Figure 4.19-1.

WATER-2: Drainage and Erosion Control Best Management Practices. The Applicant shall implement the following drainage and erosion control Best Management Practices (BMPs) and other measures in support of wind farm construction and operation.

Access Road Design

1. Grade roads shall have a cross-slope, either in-sloped or out-sloped, depending on the terrain (see following comments). This will quickly remove water from the traveled way. Water permitted to run down the roadway over long travel paths will become concentrated with higher velocities, and thus more erosive.

2. In minimal terrain with flat or mild gradients, excluding eroded channels, access roads shall be "out-sloped" or down-sloped, with the high side at or near natural ground elevation. This will maintain storm water in the form of sheet flow. Sheet flow is low velocity and less erosive than confined flow. Out-sloping may not be appropriate for safety reasons if the road is cut into a steep hillside, and/or if the native soil is slippery under wet conditions.

3. When a road is "in-sloped", storm water shall be collected in a graded ditch that provides frequent water crossings, including water bars, rolling dips, and/or culverts. At the end of watercourse crossings, appropriate methods shall be used to disperse the flow and dissipate energy, including rock rip-rap.

4. Sides casting and placement of fill on slopes shall be minimized and avoided if possible. Placement of fill on steep slopes increases the risk of slides and excessive erosion.

5. When placement of fill on slopes is unavoidable, benching construction methods shall be used to keep fill depths uniform.

6. Soils disturbance shall be kept to a minimum.

7. The number of watercourse crossings shall be minimized, and avoided where feasible.

8. Any watercourse crossings that are constructed shall be perpendicular to the watercourse.

9. Access road design shall attempt to follow natural contours, unless this conflicts with WATER-1 BMPs above. Where practical, design grades shall not exceed 10 percent, with a maximum of 15 percent for short sections.

10. Areas of unstable stable or highly erodible soils shall be avoided. As discussed, other than field observation, limited soils information is available. In accordance with Kern County Grading requirements, a soils report will be required for grading. The soils investigation should seek to identify problematic areas.

11. Access roads shall be watered, or stabilized via an approved stabilizer, and compacted to form a stable surface.

12. Any areas disturbed by construction shall be revegetated with BLM-approved native species, where practicable, according to the project rehabilitation plan.

At-Grade Drainage Crossing Design

Where drainage crossings cannot be avoided, proper design of drainage crossings to receive and convey storm water flow is necessary to minimize the risk of crossing failures, the resulting erosion, and damage to the watercourse.

In addition to quantifying the storm water flow that must be conveyed, consideration should be given to the potential for clogging or reduced capacity due to natural debris, dissipation of velocity (and energy) of the flow through the culvert, and structural protection of the streambed and crossings from scour.

Culvert Design

Culvert installation may be appropriate for narrow eroded drainages, and locations where roadway slopes become prohibitive for an at-grade crossing. All grading and drainage design must comply with the Kern County Design Standards as well as the requirements of California Department of Fish and Wildlife (CDFW) and the Lahontan RWQCB. The following are the Kern County Standards paraphrased, with comparisons to the requirements of the Lahontan RWQCB and CDFW.

1. Culverts shall convey the 10-year storm water flow without a headwater condition that exceeds the soffit of the pipe. On a case-by-case basis, the RWQCB has required the culvert pipe to pass the 100-year storm flow. However, RWQCB does not have standards limiting headwater conditions for the 100-year flow.

2. Culverts shall not be less than 18 inches in diameter (which reduces clogging).

3. The crossing shall pass the 100-year design storm through a combination of culvert flow and flow overtopping the roadway. However, specific energy of the flow shall not exceed 1.5 feet in depth in accordance with Kern County standards. In this case, the capacity of the crossing is usually calculated as the sum of the culvert flow, (under an entrance headwater), and weir flow over the crown of the roadway. The design process is iterative in that the headwater elevation must coincide with the water surface elevation as it flows over the road crown (at less than or equal to the maximum permitted energy level).

In addition to the above Kern County requirements, the following are recommended design parameters for culverts in rural hilly and mountainous terrain.

6. Culverts should be designed for the 10-year storm event with a headwater to depth ratio of less than 1.0. Ponded water at the culvert inlets increases risk for clogging due to floating debris. This parameter usually results in a pipe-flow depth of one-half to two

thirds full. Flared metal end sections are recommended to greatly increase the capacity of pipes to pass debris and reduce entrance head.

7. When possible, culvert diameters should approach the width of the active channel width. Due to the width of many natural drainage courses within the Project limits, meeting these criteria may not be practical.

8. Culverts should be aligned along the natural course of the channel. Culverts should be set at the same gradient as the natural channel and should not be placed on fill material.

9. Some publications recommend a minimum gradient of 3 percent to minimize build up of sediment. Other publications give priority to minimizing erosive velocity, which often warrants gradients less than 3 percent. Regardless, outlet velocities need to be mitigated using energy dissipating methods.

10. Minimizing fill over culverts is recommended to reduce the risk of damage if failure occurs. This is a special consideration at crossings with potentially large storm water flows. In these conditions, the at-grade crossing rather than a culvert becomes a more viable option.

11. Culvert outlets should extend at least 2 feet beyond fill slopes. Energy at culvert outlets must be dissipated such that the erosive potential does not exceed undeveloped conditions. Rock riprap placed at pipe outlets and sediment/stilling basins are effective methods to dissipate energy; to be effective, however, these measures must be properly designed during the plan preparation process. This recommendation should not limit the designer from using other or additional methods to dissipate energy and mitigate excessive erosion.

12. Rock riprap should be placed at outlets to sediment/stilling basins to dissipate energy of flow exiting these basins.

Improved Sites

The following general storm water mitigation measures shall be included in the design of improved facilities sites, including operations and maintenance facilities and yards, substations, wind turbines, and other relevant facilities located on site:

1. Grading shall conform to Kern County Grading Guidelines and the California Uniform Building Code, which include most, if not all of the following additional criteria.

2. Grading design shall include provisions to receive and discharge storm water. Supporting engineering calculations shall be provided for collection, discharge, and energy dissipation.

3. Grading and site improvements shall be designed to receive and discharge stormwater as close to natural conditions as possible.

4. Where possible, grading design shall consider routing storm flows around facilities that harbor potential sources of pollution. These may include material storage, fueling stations, or sanitary facilities. As storm water discharges from improved sites shall be restored as much as possible to its natural state.

5. Grade design and site improvements shall consider any depth of flood through the site. Supporting engineering calculations shall be provided for flood depth, if applicable.

6. Retention facilities shall be provided such that storm water discharge from improved sites does not exceed undeveloped conditions.

7. Design of turbine sites shall consider depths and velocity of storm water flow through the turbine site. Turbines and their foundations shall be protected sufficiently from erosion, or scour around the foundations. Soil cement backfill over foundations, and berming around turbines to dissipate scouring velocity may be applicable and should be considered.

WATER-3: Comprehensive Drainage Plan. To ensure that the Proposed Action would not result in detrimental alteration of stormwater flows on site, prior to construction the Applicant shall prepare and adhere to the recommendations of a Comprehensive Drainage Plan. The comprehensive drainage plan shall provide engineering design level plans and implementation procedures for all proposed facilities, including proposed culverts, at-grade stormwater crossings, access roads, wind turbine pads, earthwork, and other facilities and actions on site that could result in altered on site topography. The Comprehensive Drainage Plan shall ensure that the proposed facilities are designed to minimize interference with existing drainages and drainage patterns, and ensure that BMPs, as outlined in Mitigation Measure WATER-1, are applied on site to ensure efficacy.

WATER-4: Operations Period Drainage Maintenance Plan. Before operations start, the Applicant shall complete and adhere to the recommendations of an Operations Period Drainage Maintenance Plan (Drainage Maintenance Plan). This plan shall include requirements for monitoring, inspecting, and repairing of drainage facilities and on site roadways during operations, sufficient to ensure that erosion and sedimentation are minimized during the operation period. The Drainage Maintenance Plan will include frequency of inspection of roads and drainage appurtenances, as well as routine maintenance.

4.19.5 Residual Impacts After Mitigation

Even with implementation of the proposed mitigation for potential water resources impacts, some minor residual impacts would occur as a result of implementation of the Proposed Action. Regarding surface water hydrology, minor residual changes within the TWP area could result in minor alterations of surface water hydrology and drainage downstream, including minor potential changes to erosion and sedimentation patterns off site. For water quality, even with adherence to the conditions of a General Construction NPDES permit, a minor degree of water quality

degradation could occur as a result of Project implementation. Finally, with respect to groundwater, up to 7 AF/Y of groundwater withdrawals during construction, and 2 AF/Y during operation, would result in a minor to negligible residual impacts to groundwater storage and levels.

4.20 Impacts on Wildland Fire Ecology

4.20.1 Methodology for Analysis

The California Department of Forestry and Fire Protection (CAL FIRE) maps and datasets on statewide Fire Hazard Severity Zones (FHSZ), aerial photographs, and documentation on wildland fire ecology on other projects in the area were all referenced to determine wildfire risk in the vicinity of the proposed TWP site. Published literature on fire behavior and indirect impacts on natural resources was reviewed to assess potential indirect impacts of the TWP.

Environmental Effects of Fires

Although fire can benefit natural ecosystems that have evolved with occasional fire and that benefit from the stimulation of growth through the reproduction of plants and wildlife habitat, fire can also be detrimental to biological and other natural resources, such as air quality and water quality.

Biological Resources

The environmental effects of fire regimes are determined by the life-history and demography of organisms, the landscape context of the fire, the fuel environment, and fire risk reduction and suppression activities. The impact of a particular fire event on the environment depends principally on its context within the fire regime under which a particular ecosystem has evolved.

The landscape context for fire is important at a range of scales, from the broad gradients in fire seasonality and occurrence to the much finer-scale variation of topography, vegetation and fire histories in particular landscapes. The character and composition of landscapes—particularly their topography, their ecosystems and the extent to which they are fragmented and modified, and the forms of land use and management—have significant implications for fire occurrence, behavior and impacts. Conversely, the same fire can have differential impacts on different parts of the landscape. These effects may be benign for biodiversity in conservation reserves, adverse for primary production systems, and problematic for water quality.

Different regions and ecosystems have particular fuel characteristics, in terms of quantity, distribution, persistence and flammability. Because fuel and ignition are the significant determinants of fire behavior that people can modify (the others are weather and topography), fuel management—for example, through fuel reduction burning or physical removal—is a central activity in fire management.

The introduction of exotic plants and animals, and changes in populations of native herbivores, can have major consequences for the fuel environment. This is in part because previously disconnected or poorly connected fuels become more contiguous if the new species fills a habitat gap. Conversely, the introduction of domestic livestock or the increased populations of native herbivores associated with particular land management practices may diminish fuel loads in some environments through grazing pressure.

Weedy species have been known to invade desert and semi-desert habitats in areas where fires have occurred infrequently because of scant fuels sources. Because vegetation communities can be converted following fire, these changes in dominant vegetation communities can drastically affect plant and animal habitat and can affect the prevalence of special-status species. When fires occur in these areas, vegetation can change (such as converting to non-native grasses) and become more susceptible to ignition. The flammable mix of alien, invasive species such as cheatgrass, red brome, and mustards make a significant contribution to high levels of fine fuels that can threaten the area with increased fire frequencies. Coupled with high winds and high temperatures, this unnatural fuel bed can facilitate the rapid movement of embers and heat. These fuels contribute to hot, fast-moving fires, which are becoming increasingly frequent in Southern California's deserts, endangering the continued existence of native desert ecosystems (Brooks, M.L. and T.C. Esque. 2001).

Fires occur at various scales and with variations on fragmentation and different plants and animals may respond differently. Not all plants respond the same way when burned by a wildfire. Some die, others resprout, and others still appear little affected. Some of these differences are due to the individual species, some are due to the characteristics of the fire, and some may be due to the particular environmental conditions before and after the fire. Some species flower abundantly soon after fire, while others may take several years to produce their first seed. Some plant species appear on burnt ground as if from nowhere because they were not obvious before the fire. They have regenerated from the germination of seed buried in the ground, stimulated by heat or smoke or the reduced competition following fire. Succession of some woody plants can take several decades following fire, such as juniper (*Juniperus* sp.). Such species are of special management interest because they are vulnerable to short intervals between fires, and can be easily driven to local extinction.

Animal species also behave differently in the face of fires. Ground dwelling species, such as ground squirrel and some small reptile species may find refuge in burrows whereas other species such as desert tortoise and kit fox may succumb to a high-intensity and fast moving fire.

Fire risk reduction and suppression activities have the potential to change the environment directly and indirectly through altering fire regimes. Fuel modification is fundamental component of fire risk reduction. Fire suppression activities may involve backburning, construction and use of fire trails, and the use of chemical retardants. Each of these can have adverse environmental impacts, although these can be minimized with good planning and management.

Air Quality

Carbon dioxide, water vapor, carbon monoxide, particulate matter, hydrocarbons, and other constituent materials are all present in wildfire smoke. The specific composition of smoke depends largely on the fuel type (vegetation types contain different amounts of cellulose, oils, waxes, and starches, which when ignited produce different compounds). In addition, hazardous air pollutants and toxic air contaminants, such as benzene and formaldehyde, are also present in smoke. However, the principal pollutant of concern from wildfire smoke is particulate matter. In general, particulate matter from smoke is very small in size and can be inhaled into the deepest

recesses of the lungs, presenting a serious health concern (Lipsett, 2008). Overall, large quantities of pollutants can be released by wildland fires over a relatively short period of time. Air quality during large fires can become severely hazardous and can remain impaired for several days after the fire is ignited.

Water Quality

Fire can affect water quality by increasing potential for erosion and sedimentation in areas where vegetation has been burned by fire. Water chemistry can also be altered through the introduction of pollutants and chemical constituents. Aquatic environments may also be impacted through the introduction of fire retardant chemicals used during firefighting activities.

Erosion and Sedimentation

Watersheds severely burned by wildfire are vulnerable to accelerated rates of soil erosion and can experience large amounts of post-fire sediment deposits. Increases in post-fire suspended sediments in streams can result from erosion and overland flow, channel scouring, and creep accumulations in stream channels after an event (USDA, 2005).

Water Chemistry

Ash deposits generated by a fire can affect the pH of water immediately after the event, potentially increasing to levels that violate water quality standards. In addition, increases in the pH of nearby soil can also cause increases in stream flow pH (USDA, 2005). Dissolved nitrogen levels can increase after fires as a result of accelerated mineralization and nitrification (dissolved nitrogen is commonly studied as an indicator of fire disturbance), but these levels do not typically exceed established water quality standards (USDA, 2005). Dissolved phosphorous, sulfur, chloride, and total dissolved solids levels can increase after a fire, but studies have shown that these increases typically do not result in violation of drinking water quality standards (USDA, 2005).

Fire Retardant

The use of fire retardants to protect communities, sensitive resources, or other assets has proven highly effective, but it can have a direct effect on aquatic environments. The use of ammonium-based retardants can affect water quality and, in some instances, they can be toxic to aquatic biota (USDA, 2005). Nitrogen-containing retardants can potentially affect drinking water quality, and retardants containing sodium ferrocyanide (YPS) can potentially be lethal for aquatic organisms (USDA, 2005).

4.20.2 Discussion of Direct and Indirect Impacts

Alternative 1 - Proposed Action (40 WTGs)

Construction

Water trucks would be used to support the Project's water needs, including water for concrete mixing; however, no dedicated water tanks or water trucks are proposed for fire suppression.

Construction activities involving the use of vehicles and heavy machinery, and personnel smoking at the Project site could result in the ignition of a wildfire. During construction, heavy equipment and passenger vehicles driving on vegetated areas prior to clearing and grading could increase the risk of fire. Heated mufflers, explosives used during site preparation, and improper disposal of cigarettes could potentially ignite surrounding vegetation. Although the characteristics of the site present a moderate fire hazard, during extreme weather conditions a grass fire originating at the site could spread up the slopes of the adjacent Tehachapi Mountains out of control and pose a risk to life and property. As a result, the probability of a wildfire occurring as a result of project construction would be moderate due to the presence of juniper woodland and non-native grassland and typical hot and dry weather conditions that persist for several months of the year and the proposed high level of heavy equipment use during construction.

A wildfire that escapes control and spreads into the mountains could result in a high level of damage, and the risk of fire as a result of project construction is therefore considered substantial. The level of "risk" of an event is a combination of the probability of an event's occurrence and the magnitude of the damages of the event's occurrence. Calculations of the risk of low-probability, high-damage events yield a moderate risk. However, history has shown that society is particularly risk-averse to low-probability, high-damage events.

Operation and Maintenance

Operation of the Proposed Action could result in wildfire ignition if the rotor blades were to spin out of control resulting in a fire in the nacelle. In addition, during operation, lightning strikes on WTGs could create power surges that can result in a fire.

Wind turbines can be the source of wildfire ignitions due to collection line failure, turbine malfunction or mechanical failure, and lightning- and bird-related incidents. When mechanical or electrical failures cause turbines to catch fire, they may burn for many hours due to the limited ability of fire suppression crews to effectively fight fires hundreds of feet above the ground. High-wind conditions are risky for both WTG malfunction and the spread of wildfire. Wind-blown flaming debris from a turbine fire can ignite vegetation in the surrounding area. In addition, pad-mounted transformers can explode and result in a wildfire ignition. These types of operational fires are expected to be a rare occurrence. However, vegetation clearance requirements and Project design features and project operations would reduce the potential for wildfire ignition and the potential for a wildfire to spread out of control. In addition, as proposed, each WTG at the TWP site would be equipped with a fire detection system. A lightning rod would be installed atop the nacelle at each WTG, lightning shielding would be installed on all blades, and shielding would be installed on other sensitive equipment as well, which would reduce the risk of lightning-induced wildfire at the site. In addition, temporary and permanent roads across the TWP site would break the continuity of fuels at the site, which would slow or stop the progression of potential wildfires originating on the site at individual turbines or other facilities.

The height of the WTGs could interfere with aerial firefighting operations by obstructing low-level flight paths within the site boundaries. While the presence of the WTGs along with other

wind energy facilities could restrict aerial firefighter's access to portions of the site, aerial firefighting would not be obstructed around the perimeter of the site, ensuring that fire containment would be feasible regardless of the existence of WTGs on the project site. Obstructions to aerial firefighting due to the presence of WTGs would be minimal.

Mitigation Measure WF-2 would require that each WTG be equipped with a fire extinguishing system and an emergency braking system, which would minimize the potential for WTG-related ignitions at the site. Because these mitigation measures would not disturb or disrupt the natural environment and would not threaten the health or safety of people, their implementation would not result in adverse impacts.

Mitigation Measure WF-3 would ensure the maintenance of existing emergency response and general service capacities by the Kern County Fire Department through the maintenance of water supplies for firefighting on-site, maintenance of emergency access roads, and provision of fire safety educational material and rescue gear and equipment to the Kern County Fire Department.

The proposed Weed Management Plan (see Appendix J) would minimize the potential for weed colonization and dominance on site by including implementation of a risk assessment of the invasive weed species currently known within the study are, procedures to control heir on spread on site, and procedures to help minimize the introduction of new weed species. Implementation of these measures would not completely eliminate the introduction of noxious weeds into the study area, but would minimize their introduction and control their spread in on the project site.

Decommissioning

The risk of wildfire ignition during decommissioning would be similar to that during construction, through the use of equipment and personnel on site. Mitigation Measure WF-1 includes a provision for fire-safe practices during decommissioning activities.

Alternative 2 - Modified Proposed Action (37 WTGs)

Construction

The wildfire-related construction impacts of Alternative 2 would be nearly identical to that of the Proposed Action (Alternative 1). Construction activities would be slightly less intense due to a reduced number of WTGs, but the risk of wildfire ignition and the increase in wildfire frequency from the introduction of non-native plants would be substantially the same. Mitigation Measures WF-1 and VG-1e (see Section 4.20.4), as well as TWP BMPs would substantially reduce the risk of wildfire ignition and spread for the reasons set forth above.

Operation and Maintenance

The wildfire-related operational impacts of Alternative 2 would be nearly identical to that of the Proposed Action. Maintenance activities would be slightly less intense and there would be fewer WTGs that could potentially start a fire, but the risk of wildfire ignition and the increase in wildfire frequency from the introduction of non-native plants would be substantially the same.

Mitigation Measures WF-1, WF-2, WF-3, and VG-1e, and BMPs would substantially reduce the risk of wildfire ignition and spread for the reasons set forth above.

Decommissioning

The wildfire-related decommissioning impacts of Alternative 2 would be nearly identical to that of the Proposed action. Decommissioning activities would be slightly less intense as a result of fewer turbines, but the risk of wildfire ignition would be substantially the same. Mitigation Measure WF-1 would reduce the risk of wildfire ignition and spread for the reasons set forth above.

Alternative 3 - No Action Alternative

Under Alternative 3, the TWP would not be constructed and no impacts related to wildfire would occur from the TWP. The site would continue to be managed in accordance with the CDCA Plan (as amended).

Alternative 4 - No Project; Unsuitable

Under Alternative 4, the TWP would not be constructed and no impacts related to wildfire would occur. The CDCA Plan would be amended to preclude wind energy development on the site in the future.

Alternative 5 - No Project; Suitable

Under Alternative 5, the TWP would not be constructed and no impacts to wildfire would occur. The CDCA Plan would be amended to allow wind energy development on the site in the future. Future wind energy facilities could potentially result in wildfire ignitions similar to the Proposed Action.

4.20.3 Cumulative Impacts

Geographic Extent/Context

The geographic area for cumulative wildland fire impacts includes the area within one mile of the TWP boundary for wildland fire impacts. The temporal scope for cumulative wildland fire impacts includes the duration of construction, operation, and decommissioning of the TWP.

Existing Cumulative Conditions

A cumulative wildland fire impact would occur if multiple projects were to increase the frequency of fires in the area, which would result in indirect impacts on natural resources as described in Section 4.21.2. The following are the existing wind energy systems, as presented in Table 4.1-1 (Section 4.1) of this DEIS/PA:

1. Manzana Wind Energy Project
2. Alta–Oak Creek-Mojave Wind Project
3. Coram Brodie Wind Project

4. Pine Tree Wind Development Project
5. North Sky River Wind Energy Facility

Reasonably Foreseeable Projects

Below are five current and 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 are considered reasonably foreseeable. Most of these projects have undergone independent environmental review or will do so prior to approval. Even if environmental review has not been completed for the cumulative projects listed below, their effects were considered in the cumulative impacts analyses in this EIS. The reasonably foreseeable projects within the cumulative geographic and temporal context of the TWP for wildland fire ecology impacts are:

1. 5,820-acre MWEP,
2. 8,300-acre PWEP,
3. 1,325-acre Pacific Wind Infill Project,
4. 6,739-acre Catalina Renewable Energy Project; and
5. Southern California Edison Tehachapi Renewable Transmission (SCE TRTP) Project.

Construction, Operation and Maintenance, Decommissioning

The MWEP, PWEP, acre Pacific Wind Infill Project (PWIP), Catalina Renewable Energy Project (CREP), and SCE TRTP are located within the cumulative study area for wildland fire ecology. Construction associated with the Catalina Renewable Energy Project and the Southern California Edison Tehachapi Renewable Transmission Project (SCE TRTP) Project would occur at the same time as the TWP. Construction and residential use in the Mojave Specific Plan area could result in wildfire ignitions due to the use of heavy equipment, smoking, or welding. Ignitions from nearby roadways could originate from drivers throwing cigarette butts out car windows. Wildfire due to construction of these cumulative projects could result in wildfire ignitions. Wildfire ignitions from the TWP could combine with ignitions from the cumulative projects listed above to increase the frequency/intensity of wildfires above the average fire frequency. The projects that are constructed concurrently could substantially increase the frequency of fire in the area above natural conditions. With BMPs and mitigation measures required for the TWP, the contribution of the Proposed Action to this cumulative impact would be minimized, and similarly, the extensive fire-safe mitigation measures required for these other projects would minimize wildfire ignitions from these sources. As a result, the overall cumulative increase in fire frequency would not be substantial. Because WF-1 would not disturb or disrupt the natural environment and would not threaten the health or safety of people, its implementation would not result in adverse impacts.

The Proposed Action is scheduled to be in operation concurrently with the existence of the MWEP, PWEP, PWIP, CREP, and the SCE TRTP. Transmission lines can 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. Wildfire ignitions due to operation and use of these cumulative projects could result in wildfire ignitions. Wildfire

ignitions from the TWP could combine with ignitions from the cumulative projects discussed in this section and drivers on nearby roadways to increase the frequency of wildfires above the baseline fire frequency.

With the implementation of BMPs and mitigation measures required for the Proposed Action (WF-1, WF-2, WF-3), the contribution of the TWP to this cumulative impact would be minimized by requiring implementation of a risk assessment of the invasive weed species currently known within the study area, procedures to control their spread on site, and procedures to help minimize the introduction of new weed species. Because this mitigation measure would not disturb or disrupt the natural environment and would not threaten the health or safety of people, its implementation would not result in adverse impacts.

The TWP would be decommissioned several decades into the future, and there may be other developments at that time that may occur concurrently with project decommissioning. It is anticipated that the MWEP, PWEP, PWIP, CREP, and SCE TRTP would be in existence at the time of decommissioning. Decommissioning of these cumulative projects could result in wildfire ignitions. Wildfire ignitions from decommissioning of the TWP could combine with ignitions from the aforementioned project and drivers on nearby roadways to increase the frequency of wildfires above the baseline fire frequency. With mitigation measures required for the Proposed Action (WF-1), the contribution of the TWP to this cumulative impact would be minimized by requiring implementation of a risk assessment of the invasive weed species currently known within the study area, procedures to control their spread on site, and procedures to help minimize the introduction of new weed species. Because this mitigation measure would not disturb or disrupt the natural environment and would not threaten the health or safety of people, its implementation would not result in adverse impacts.

4.20.4 Mitigation Measures

WF-1: The Proposed Action shall develop and implement a Fire Safety Plan for use during construction and decommissioning. The Proposed Action shall submit the Fire Safety Plan, along with maps of the TWP site and access roads, to CAL FIRE and the Kern County Fire Department for review and approval prior to the issuance of a right of way grant. The Fire Safety Plan shall contain notification procedures and emergency fire precautions including, but not limited to, the following:

1. All internal combustion engines used at the TWP site shall be equipped with spark arresters. Spark arresters shall be in good working order.
2. Light trucks and cars shall be used only on roads where the roadway is cleared of vegetation. Mufflers on all cars and light trucks shall be maintained in good working order.
3. Fire rules shall be posted on the project bulletin board at the contractor's field office and areas visible to employees.

4. Equipment parking areas and small stationary engine sites shall be cleared of all extraneous flammable materials.
5. Personnel shall be trained in the practices of the Fire Safety Plan relevant to their duties. Construction and maintenance personnel shall be trained and equipped to extinguish small fires in order to prevent them from growing into more serious threats.
6. The Proposed Action shall make an effort to restrict use of chainsaws, chippers, vegetation masticators, grinders, drill rigs, tractors, torches, and explosives to outside of the official fire season. When the above tools are used, water tanks equipped with hoses, fire rakes, and axes shall easily accessible to personnel.
7. Smoking shall be prohibited in wildland areas and within 50 feet of combustible materials storage, and shall be limited to paved areas or areas cleared of all vegetation.
8. Fires ignited onsite shall be immediately reported to BLM FIRE and the Kern County Fire Department.
9. The engineering, procurement, and construction contract(s) for the Proposed Action shall clearly state the requirements of this mitigation measure.

Mitigation Measure WF-1 would require development and implementation of a fire management plan, including minimum standards for fire-safe practices during construction, which would minimize the potential for a wildfire ignition to occur as a result of Project-related construction activities and the presence of personnel on site. Because this measure would not disturb or disrupt the natural environment and would not threaten the health or safety of people, its implementation would not result in adverse impacts.

WF- 2: The Proposed Action shall install an automatic fire extinguishing system that complies with international standards for fire protection systems on each wind turbine generator at the TWP site. Proof of system installation shall be submitted to BLM and Kern County prior to energizing the Proposed Action. This Measure would require that each WTG be equipped with a fire extinguishing system and an emergency braking system, which would minimize the potential for WTG-related ignitions at the site.

WF-3: The Proposed Action shall ensure that facility, accessory, and/or process modifications conform to Kern County Fire Department regulations and standards, up to and including the following.

1. Installation and maintenance of water tanks/cisterns strategically installed at one 10,000 gallon tank per square mile.
2. Installation and maintenance of access roads which interlace the project site.

3. Donation of fire safety education material through the Kern County Fire Prevention Unit to the elementary schools in the Mojave and Tehachapi areas.
4. Donation of rescue equipment and gear to the Kern County Fire Department for fire stations in the Mojave and Tehachapi areas.

4.20.5 Residual Impacts after Mitigation

Implementation of the mitigation measures above would minimize the impacts of the TWP on wildland fire incidence in the surrounding area but would not completely eliminate the potential for wildfire occurrence.

4.21 Wildlife Resources

This section analyzes potential impacts to wildlife resources from the construction and operation of the Tylerhorse Wind Project (TWP). This analysis addresses potential impacts of the Proposed Action to special-status wildlife species and their habitats. Direct, indirect, and cumulative impacts are analyzed and quantified, if possible. As discussed in Chapter 3.22, focused wildlife surveys were conducted for: desert tortoise (*Gopherus agassizii*), burrowing owl (*Athene cunicularia*), golden eagle (*Aquila chrysaetos*) nests and raptors, and special-status mice. Avian surveys additionally included avian point counts, mist-netting and nocturnal migration surveys.

4.21.1 Impact Assessment Methodology

Project impacts are considered permanent if they would involve the conversion of land to a new use, such as with the construction of new roads, foundations for the Wind Turbine Generators (WTGs), or operation and maintenance facilities. Temporary Project impacts are those effects that do not result in the permanent land use conversion. Temporary effects to habitat or other ground disturbance activities restricted solely to the construction phase, such as grading roads and clearing vegetation within staging areas, are considered temporary, provided that native vegetation is not replaced with infrastructure or the area is not maintained free of vegetation, and that restoration is deemed feasible prior to TWP implementation.

As identified in Section 4.17, the Proposed Action would not conflict with the provisions of an approved local, regional, or state Habitat Conservation Plan since no such plan is currently applicable to the Proposed Action.

4.21.2 Discussion of Direct and Indirect Impacts

Alternative 1 - Proposed Action (40 WTGs)

This section presents the direct and indirect impacts to wildlife resources related to the construction, operation, and decommissioning of the Proposed Action. Effects to wildlife resources from the TWP are classified as direct or indirect. Direct impacts are those impacts that result from a project and occur at the same time and place [40 C.F.R 1508.8(a)]. Indirect impacts are caused by a project, but can occur later in time or farther removed in distance while still reasonably foreseeable and related to the Project [40 C.F.R 1508.8(b)].

Construction

The potential impacts considered in this analysis are those most likely to be associated with construction of the TWP. Construction of the Proposed Action would result in direct and indirect impacts to wildlife and wildlife habitats. Potential impacts to terrestrial wildlife that may be associated with the Proposed Action include: 1) the direct loss of certain terrestrial wildlife habitats due to construction activities associated with earth-moving at the turbine pad sites and associated access roads; 2) the temporary, indirect loss of wildlife habitat use or displacement of wildlife use during construction; 3) direct mortality or injury (principally to birds and bats) due to collisions with turbines, meteorological towers, and/or transmission lines; 4) vehicle-related

mortality; and 5) habitat fragmentation. The timing, duration and magnitude of potential impacts to wildlife and their habitats depend on a number of factors including the type and duration of disturbance, the species of wildlife present, time of year, and the implementation of recommended and required mitigation measures.

Habitat Loss for Common Wildlife

Implementation of the Proposed Action would result in the direct disturbance of 190.9 acres of wildlife habitat. Direct disturbance to wildlife habitat would occur as a result of ground surface grading and excavation, tree and shrub removal, and/or scraping of road surfaces that disturbs surface and subsurface soils. Each of these activities could effectively remove and/or degrade existing habitat, thereby reducing its availability to local wildlife populations.

Following construction, portions of the WTG pad sites, unused portions of roads, the electrical collection system ROW, and extra workspace areas (a total of 167.3acres) would be reclaimed. Following construction, disturbed areas would be revegetated with a local native seed mix approved by the BLM. The duration of temporary vegetation impacts would depend, in part, on the success of revegetation and reclamation efforts and the time needed for natural succession to return revegetated areas to pre-disturbance conditions. Grasses and forbs are expected to become established within the first several years following reclamation; however, an estimated 10 to 20 years would be required for shrub establishment and production of useable forage. With successful revegetation permanent habitat loss under the Proposed Action would be reduced from approximately 190.0 acres to 23.6 acres (Sapphos, 2014). Ground disturbance associated with construction activities will cause the associated mortality of some small amphibian, reptile or mammal species with limited home ranges and low mobility.

Although there is no way to accurately quantify the effects of habitat disturbance on wildlife usage, the impact is likely to be moderate in the short term but will decrease over time as reclaimed areas become more suitable as wildlife habitat. Most of the affected wildlife species would be common and are widely distributed throughout the Project area. The temporary and permanent habitat loss and impacts to individuals during habitat removal would have a negligible impact on populations of these species throughout the region.

The TWP's direct and indirect construction-related impacts to common wildlife and their habitat would be reduced by implementation of VEG-1c (Weed Management Plan), VEG-3 (Habitat Restoration and Revegetation Plan), WIL-1a (Designated Biologist), WIL-1b (Biological Monitoring), WIL-1c (Worker Environmental Awareness Program), WIL-1d (Speed Limits), and WIL-1e (Preconstruction Surveys for Special-Status Wildlife).

Tehachapi Slender Salamander and Yellow-Blotched Salamander

As described in Section 3.22, Two special-status amphibian species were identified in the Project region: Tehachapi slender salamander (*Batrachoseps stebbinsi*) and yellow-blotched salamander (*Ensatina eschscholtzii croceator*) (Sapphos, 2011a; Sapphos, 2011b CDFW, 2013; USFWS, 2013)). Project impacts are not anticipated to these species, as neither is expected in the Project area.

Desert Tortoise

No desert tortoise or diagnostic sign indicative of desert tortoise presence (e.g., track, scat, active or inactive burrows, scutes, courtship rings, pallets, drinking depressions, and/or live tortoise) was observed in the Project area during surveys in October 2011 or on the Manzana Project study area during protocol-level surveys of desert tortoise conducted during spring 2005. While the Project area is located near the westernmost edge of the range of the desert tortoise and contains marginal habitat to support this species, there is no evidence to suggest that desert tortoise inhabit the Project area or areas in the immediate vicinity.

While the results from these past surveys indicate that desert tortoise is likely to occur in areas near and adjacent to the Project area, it is concluded that desert tortoise are unlikely to occur within the Project area due to negative survey results from the 2011 protocol-level survey effort on the property; negative survey results from the 2005 protocol-level survey effort in the Manzana Project study area; lack of observations within the Project area from survey efforts conducted from 2005 to 2009, which failed to detect tortoises in the margins of areas directly adjacent to the Project area. Therefore, no potential direct or indirect effects on desert tortoise are anticipated from implementation of the Proposed Action.

Coast Horned Lizard

Based on recent coast horned lizard (*Phrynosoma blainvillii*) sightings in the Manzana Project study area, coast horned lizard are expected within Mojavean juniper woodland and scrub and non-native grassland vegetation communities in the Project area. Direct impacts to this species could include mechanical crushing during WTG site preparation, grading of new access roads, and preparation of staging locations; mortality from vehicles; and temporary displacement during construction due to increased human activity. Furthermore, Project implementation may result in permanent loss of habitat due to permanent structures and/or roads and temporary loss of habitat from construction activities.

It is expected that impacts would be limited to no more than a few individuals, thus, a minor level of impact would occur to the local breeding population. The TWP's direct and indirect construction-related impacts to coast horned lizard would be reduced by implementation of VEG-1c (Weed Management Plan), VEG-3 (Habitat Restoration and Revegetation Plan), WIL-1a (Designated Biologist), WIL-1b (Biological Monitoring), WIL-1c (Worker Environmental Awareness Program), WIL-1d (Speed Limits), and WIL-1e (Preconstruction Surveys for Special-Status Wildlife).

Cooper's Hawk and Prairie Falcon

Cooper's hawk (*Accipiter cooperii*) and prairie falcon (*Falco mexicanus*) are resident raptor species that were detected in low numbers during both the winter raptor surveys and the spring and fall migratory surveys. No nests were identified in or near the Project area. Implementation of the Proposed Action would result in the direct disturbance of Joshua tree woodland, Mojave Desert wash scrub, and Mojavean juniper woodland and scrub, which provide foraging habitat for these species. Construction-related mortality impacts from the Proposed Action on these species are considered unlikely.

Golden Eagle

Golden eagles are a resident species in the Tehachapi Mountains, where numerous nesting opportunities are available on ledges and rock outcrops. Resident golden eagles forage in and near the Project area throughout the year, and during the spring and fall migration. Migrants in fall were generally observed flying above 1,000 feet, whereas the more numerous resident birds frequently foraged at heights below 100 feet above ground level (Sapphos, 2011a).

Surveys to identify active and historic golden eagle nests were performed in 2010 and 2011, covering all suitable nesting habitat within 10 miles of the TWP site (see Section 3.22). In 2004, an active eagle nest was detected by Bloom Biological, Inc., approximately 4.3 miles west of the northwestern corner of the Project area (Sapphos, 2011a). This nest represents the nearest historic golden eagle nest in the near-Project vicinity. No additional nests were identified within 10 miles of the Project Area during aerial surveys performed in 2010 and 2011 (described in Section 3.22 and Appendix C-1). The nearest documented golden eagle territory was approximately 15 miles west of the Project area (Sapphos, 2011a; see Appendix C-2, pg. 5-22) . Recent surveys for other projects in eastern Kern have identified nesting and foraging golden eagles as well, and together these data suggest a moderate to high population density in the region, with all potentially suitable nesting habitat associated with rugged terrain to the north of the Project area.

Direct impacts to golden eagles during construction include the loss of or disruption of foraging habitat due to noise from construction activities and human disturbance. Construction of the TWP would permanently impact 23.6 acres of various habitat types that could be used by golden eagles as foraging habitat. Temporary impacts associated with the Project would occur in association with 167.3 acres of habitat that would be revegetated following construction (VEG-3, Habitat Restoration and Revegetation Plan).

Golden eagles commence nest building prior to most other birds, and disruption of nest building or the abandonment of existing nest sites could occur should eagles nest within one mile of construction activities in the Project area. This species is sensitive to human encroachment and if nests are disturbed by humans, nest abandonment will typically occur. However, construction of the TWP is not likely to result in direct impacts to known golden eagle nests because of the distance between nest sites and the TWP.

Indirect impacts to golden eagles could include the loss of foraging habitat due to the establishment of invasive weeds potentially resulting in a decline in prey density.

Direct and indirect construction-related impacts to golden eagles would be reduced through the implementation of VEG-1c (Weed Management Plan), VEG-3 (Habitat Restoration and Revegetation Plan), WIL-1a (Designated Biologist), WIL-1b (Biological Monitoring), WIL-1c (Worker Environmental Awareness Program), WIL-1e (Preconstruction Surveys for Special-Status Wildlife), and WIL-1o (Avian Power Line Interaction Committee Standards). Measure WIL-2a requires preconstruction surveys for nesting birds, including golden eagles and a one mile no-activity buffer around any active nests with a direct line of sight to the work area, subject to adjustments in consultation with CDFW and USFWS. WIL-1k1 requires preparation of a

Golden Eagle Conservation Plan in accordance with the USFWS *Draft Eagle* Conservation *Plan* Guidance (USFWS, 2013), while WIL-1k2 (Night Operations) and WIL-1k3 (Minimize Eagle Mortality) provide contingency measures to minimize impacts to golden eagles if injury or mortality occurs. The Golden Eagle Conservation Plan shall outline conservation measures to avoid and minimize impacts on golden eagles and to meet BLM and USFWS requirements regarding the Bald and Golden Eagle Protection Act.

Burrowing Owl

Several burrowing owls were observed over-wintering within grassland and open shrub habitats in the Project vicinity during surveys, and several burrows in the Project area showed evidence of owl habitation (Sapphos, 2011a).

Direct effects to burrowing owls from construction can include destruction of burrows/burrow entrances, mortality, and habitat loss surrounding occupied burrows, night lighting, and noise. Burrows that exhibit any owl sign (e.g., owl presence, molted feathers, cast pellets, prey remains, eggshell fragments, or excrement at or near a burrow entrance) within the last three years may be considered active (CDFG, 2012). Construction activities such as grading, the movement of construction vehicles or heavy equipment, and the installation of TWP facility components may result in direct mortality through crushing of adults, young, or eggs within burrows or entrapment of/injury to owls within burrows if burrow entrances become blocked.

Construction would be conducted primarily during daylight hours; however, if it becomes necessary to conduct work at night, lighting would be needed for worker safety. Night lighting has the potential to disrupt burrowing owl breeding/nesting behavior if it would be placed in close proximity to occupied burrows. Any night lighting to be used during construction would be directed toward the interior of the disturbance area or at the specific location being constructed in order to minimize adverse effects to owls and other wildlife species, as required by Measure WIL-1f (Lighting Specifications to Minimize Bird And Bat Collisions). Construction noise could also impact breeding behavior or reproductive success.

WIL-1g (Burrowing Owl Protection Measures) requires pre-construction surveys for burrowing owls and the establishment of a 250-foot disturbance-free (or otherwise appropriate) buffer around occupied burrows during the nesting season (160-foot buffer during the non-breeding season) to minimize or avoid impacts associated with construction disturbance.

In accordance with CDFW guidance (CDFG, 2012), avoidance is the preferred method for dealing with potential Project impacts to burrowing owls. As described in the *Staff Report on Burrowing Owl Mitigation* (CDFG, 2012), the current scientific literature supports the conclusion that mitigation for permanent habitat loss necessitates replacement with an equivalent or greater habitat area for breeding, foraging, wintering, dispersal, presence of burrows, burrow surrogates, presence of fossorial mammal dens, well drained soils, and abundant and available prey within close proximity to the burrow. To offset the loss of foraging and burrow habitat on the TWP site, WIL-1g (Burrowing Owl Protection Measures) requires compensation through off-site habitat compensation, while VEG-3 (Habitat Restoration and Revegetation Plan) requires on-site restoration of disturbed habitat capable of supporting the species. The acquisition of occupied

habitat off-site would be consistent with CDFW's *Staff Report on Burrowing Owl Mitigation* (CDFG, 2012) and would be in an area where WTGs would not pose a mortality risk. If off-site acquisition and protection is pursued, the acquisition of occupied owl foraging habitat may overlap with other off-site acquisition requirements, as applicable, if approved by BLM. To increase onsite workers' recognition of and commitment to burrowing owl protection, WIL-1c (Worker Environmental Awareness Program) includes education on burrowing owl identification, sensitivities, and protection measures. Furthermore, impacts to burrowing owl foraging habitat would be minimized through the implementation of VEG-1 (Minimize Construction-related Impacts), which requires the minimization of temporary work areas to the smallest feasible size, and VEG-3 (Habitat Restoration and Revegetation Plan).

Potential indirect effects during construction include degradation of foraging habitat. The TWP would indirectly affect burrowing owls if it resulted in the introduction or spread of invasive weed species that result in changes in prey abundance or species assemblages. Soil disturbance during construction can encourage invasive weeds to encroach into the habitat from areas outside the site and weed seed can be introduced to the site if construction vehicles and equipment entering the site is not cleaned properly. Invasive weed species have the potential to out-compete native species and change the overall quality of the habitat. Impacts associated with introduction or spread of invasive weed species would be mitigated by the implementation of VEG-1c (Weed Management Plan).

California Condor

The California condor (*Gymnogyps californianus*) has not been historically or recently documented in the Project area. Results of a probability of use model developed for the condor in the Antelope Valley as it merges with the Tehachapi and San Gabriel Mountains, suggest that the Project area is located in a zone of low probability of use for condors. The analysis suggests that components of topography, specifically, relatively low site elevation and southeast-facing and northeast-facing aspects of the Project area, contribute to the low likelihood of condor use (Sapphos, 2011b).

USFWS condor flock data identifies the nearest California condor as approximately 3.9 miles west of the Project area. Even at this distance, however, the species' potential to occur on the Project area is considered low because the site lacks available nesting sites, traditional and temporary roost sites for overnight and diurnal roosting locations, and terrain that creates sufficient thermal air currents than that of the adjacent Tejon Ranch and designated critical habitat. Thus, no construction impacts are anticipated to California condor.

Swainson's Hawk, Ferruginous Hawk, American Peregrine Falcon, American White Pelican, White-tailed Kite, Northern Harrier, Sharp-shinned Hawk, Merlin, and Vaux's Swift

Each of these species was observed in the Project area in 2005 during the spring and fall migration and subsequent surveys (Sapphos, 2011a; 2013). Implementation of the Proposed Action would result in the direct disturbance of a small amount (approximately 98.5 acres) of Joshua tree woodland, Mojave Desert wash scrub, and Mojavean juniper woodland and scrub, which are considered suitable foraging and perching habitat for many of these species. Short-term, construction-related impacts to these species is not expected because these species do not

breed in the Project area and would likely flush to other nearby suitable habitats upon disturbance.

Loggerhead Shrike and Le Conte's Thrasher

Loggerhead shrike (*Lanius ludovicianus*) and Le Conte's thrasher (*Toxostoma lecontei*) are breeding residents in the Project area and were observed in low numbers during the spring and summer. Implementation of the Proposed Action would result in the direct disturbance of amount (approximately 98.5 acres) of Joshua tree woodland, Mojave Desert wash scrub, and Mojavean juniper woodland and scrub, which are considered breeding, nesting, foraging, and perching habitat for these species.

The TWP's direct and indirect construction-related impacts to loggerhead shrike and Le Conte's thrasher would be minimized and avoided by implementation of WIL-1b (Biological Monitoring), WIL-1c (Worker Environmental Awareness Program), and WIL-2a (Avoid Disturbance to Nesting Birds).

Mohave Ground Squirrel

The TWP site is within the western edge of the Mohave ground squirrel's range, though no records exist within 15 miles of the Project area (CDFW, 2013) (see Section 3.21). The BRTR cites that trapping studies performed for the Manzana Project were negative. Focused Mohave ground squirrel surveys were not performed within the Project area; however, the habitat assessment described in the BRTR concluded that this species is absent from the Project area (Sapphos, 2011a). Based on these findings, no impacts to Mohave ground squirrel are anticipated from the Proposed Action.

American Badger, San Joaquin Pocket Mouse, and Southern Grasshopper Mouse

American badger (*Taxidea taxus*), San Joaquin pocket mouse (*Perognathus inornatus*), and southern grasshopper mouse (*Onychomys torridus*) were determined to be present within the Project area, and the permanent and temporary loss of habitat as a result of construction activities could affect habitat for these species. Although there is no way to accurately quantify these effects, the impact is likely to be moderate in the short term and be reduced over time as revegetated areas produce suitable habitats. These species, while locally scarce, are widely distributed throughout the surrounding region, and the loss of some habitat for these individuals would have a negligible impact on populations of these species throughout the region. Indirect effects due to displacement of these species could also occur as a result of construction activities associated with the Proposed Action. These direct and indirect effects to badger and special-status mouse habitat would be minimized through the implementation of VEG-1 (Minimize Construction-related Impacts), which requires the minimization of temporary work areas to the smallest feasible size, and VEG-3 (Habitat Restoration and Revegetation Plan). The potential for direct Project-related mortality to these species would be reduced through WIL-1c (Worker Environmental Awareness Program) and WIL-1e (Pre-construction Surveys for Special-status Wildlife).

Special-Status Bats

Bat roosts were not identified on the TWP site; however, Sapphos (2011a) determined that trees and rock crevices in the Project area and surrounding region may provide suitable roosting habitat for resident and migratory sensitive bat species. Additionally, it was determined that habitat potentially suitable to support foraging for migratory bats during the spring and fall migration is also present. If roosting bats are present in the construction area, direct impacts could occur if humans approach an active nursery colony, if entrances to nursery colony sites become blocked, or if construction involves blasting or drilling that causes substantial vibration of the earth/rock surrounding an active nursery colony. These colonies could be located in rock crevices, caves, or culverts; and in trees (typically snags or large trees with cavities). No bat roosts or nursery colonies were detected during the 2005 and 2010 bat roost assessment surveys (Sapphos, 2011a). Potential impacts to bat roosts and nursery colonies would be reduced or avoided through implementation of WIL-1e (Pre-construction Surveys for Special-status Wildlife) and WIL-1l (Bird and Bat Conservation Strategy).

Other potential direct effects to bats could include mortality of individuals during construction activities, permanent loss of habitat due to construction of permanent structures (e.g., new towers or access roads) or other construction activities (removal of roosting habitat at pulling and assembly sites), and temporary disturbance during construction (noise, air turbulence, dust, and ground vibrations from construction equipment). Bats that forage near the ground, such as the pallid bat, would also be subject to crushing or disturbance by vehicles driving at dusk, dawn, or during the night. The construction and use of access roads could also disturb bats.

Potential indirect effects to bats include increased traffic on the site, dust, and human presence in the Project area that could result in bats abandoning their roosts or maternal colonies, if present. For example, Townsend's big-eared bat is known to abandon young when disturbed.

The TWP's direct and indirect construction-related impacts to special-status bats would be reduced by implementation of AIR-1 (Fugitive Dust Control Plan), VEG-1a (Minimize Construction-related Impacts), VEG-1c (Prepare and Implement a Weed Management Plan), VEG-3 (Habitat Restoration and Revegetation Plan), WIL-1b (Biological Monitoring during Construction), WIL-1c (Worker Environmental Awareness Program), WIL-1e (Pre-construction Surveys for Special-status Wildlife), and WIL-1f (Lighting Specifications to Minimize Bird and Bat Collisions). As described above, these measures would require biological monitoring during construction activities, worker environmental awareness training, restoration of temporarily impacted areas, minimization of impact areas, vehicle speed limits of 15 miles per hour, and control of fugitive dust.

Wildlife Movement and Migration Corridors

As described in Section 3.21, the TWP is situated along the southeastern side of the Tehachapi Connection, which is considered an important connection between the flora and fauna of the Sierra Nevada, San Emigdio Mountains, San Joaquin Valley, and the Mojave Desert. Ridgelines, canyon bottoms, and drainages within the region likely serve as movement corridors for a variety of terrestrial wildlife, including large animals such as mule deer, bear, mountain lion, and bobcat.

Ground-disturbing activity, including WTG construction, grading of new access roads, and transmission lines, and use or improvement of existing access roads could interfere with terrestrial wildlife movement during construction. Construction would affect wildlife in adjacent habitats by interfering with movement patterns or causing animals to temporarily avoid areas adjacent to the construction zone. In general, nocturnal (i.e., active at night) wildlife would be affected less by construction than diurnal (i.e., active during the day) species since construction would occur primarily during daylight hours.

More mobile species like birds and larger mammals are expected to disperse into adjacent habitat areas during the land clearing and grading phases associated with WTG construction.

Construction activities may temporarily limit terrestrial wildlife movement at WTG and infrastructure locations; however, the broad geographic range and habitat that occurs in the area of the TWP would remain available to wildlife. Mobile wildlife would be able to respond to construction activities by moving to adjacent habitats, and as many large species move during the evening or early morning when construction activities would be limited, construction would not substantially interfere with their movement.

Work areas may be fenced during construction, as needed. This fencing would be utilized to prevent wildlife or unauthorized persons from entering the work areas. This fencing would temporarily impede wildlife movement through the work area, but it would also prevent injury or mortality should wildlife approach work areas. Impacts to wildlife movement and migration corridors would be reduced by implementation of VEG-1a (Minimize Construction-related Impacts),WIL-1b (Biological Monitoring during Construction), WIL-1c (Worker Environmental Awareness Program), WIL-1d (Speed Limits), WIL-1e (Pre-construction Surveys for Special-status Wildlife), WIL-1f (Lighting Specifications to Minimize Bird and Bat Collisions), WIL-1m (Wildlife Mortality Reporting Program), WIL-2b (Fencing Designs that Facilitate Wildlife Movement), and AIR-1 (Fugitive Dust Control Plan). As described above, these measures would require biological monitoring during construction activities, worker environmental awareness training, minimization of construction night lighting, minimization of impact areas, vehicle speed limits of 15 miles per hour, and control of fugitive dust.

Local Policies or Ordinances Protecting Biological Resources

The TWP site is located on federal lands managed by the BLM, and as such, local policies and ordinances do not apply to these lands. Privately owned land surrounds the Project site, but there are no privately owned lands within the Project boundaries.

Operation

The potential impacts considered in this analysis are those most likely to be associated with operation of the TWP. Operational impacts would also include both direct and indirect impacts to wildlife resources. Ongoing operation and maintenance impacts may occur during routine inspection and maintenance of Project facilities, and normal operation of WTGs and would include such activities as routine inspections and emergency repairs, and fence maintenance. Potential impact mechanisms also include wildlife interactions with WTGs, the power line

collection line, or perimeter security fencing, and potential effects of red strobe warning lights on the movement of aerial species.

Desert Tortoise

Protocol-level survey findings described in Section 3-22 indicate that desert tortoise is likely absent from Project area. Suitable habitat is present on the Project site; however, the nearest described CNDDB occurrence of the desert tortoise approximately 7 miles to the east (CDFW, 2013). No desert tortoise or tortoise sign indicative of desert tortoise presence (e.g., track, scat, active or inactive burrows, scutes, courtship rings, pallets, drinking depressions, live tortoises, and tortoise carcasses or parts thereof) were observed during protocol-level surveys in October 2011 (Sapphos, 2011a). Based on survey findings and the known distribution of the desert tortoise in the region, operational impacts are not anticipated to this species.

Coast Horned Lizard

As discussed above, the coast horned lizard is presumed present in small numbers within the Project area. Potential operational impacts to coast horned lizard include direct impacts such as risk of mortality by vehicles and disturbance on access roads due to use by maintenance personnel, and increased predation due to the attraction of corvids such as ravens to the site. Direct and indirect impacts to coast horned lizard resulting from operation and maintenance of the TWP would be reduced through the implementation of WIL-1m (Wildlife Mortality Reporting Program), WIL-3a (Minimize Vehicle and Equipment Impacts during Operation and Maintenance), WIL-3b (Operation and Maintenance Education Program), and WIL-3c (Raven Management Plan). These measures would require vehicle speed limits of 15 miles per hour, worker environmental awareness training, predator control measures, and a Wildlife Mortality Reporting Program.

Golden Eagle

Golden eagles use the general Project area on a year-round basis. In addition to the resident eagles, there is an increase in eagle use during spring and fall migratory periods and with eagles moving into the area for over-wintering (Sapphos, 2013). In fall 2005, out of 74 individual golden eagle observations during the migration period, it was estimated that 10 to 15 of the individual eagles were migrants passing through the site, and 4 to 5 were wintering in the area (Sapphos, 2011c). Sapphos (2011a) indicated that migrants generally stayed above 1,000 feet; whereas the resident eagles frequently foraged at heights within 100 feet to 800 feet above ground level (Sapphos, 2011a; 2011c). Golden eagles are susceptible to direct impacts from WTG collisions.

The USFWS Bayesian Model (USFWS 2013, Appendix D) was used to predict annual golden eagle fatalities for the project. Using an input of zero eagle minutes based on the results of the 2011-2012 Bird Use Counts in which no eagles were observed (Sapphos, 2013), and assuming a rotor swept area based on 50 meter radius (exact turbines have not been selected, thus the need to make an assumption), 0.16 eagles are expected to be taken annually, at the 80 percent upper confidence limit (Rempel, personal communication, Aug

27, 2013). The results suggest that from 0 to 7 golden eagles could be killed during the life of this project.

As required by WIL-1k1, implementation of a USFWS-approved Golden Eagle Conservation Plan (GECP) is required to address the potential for take of golden eagles. The GECP would reduce Project-related impacts and help ensure that the Project would be in compliance with the Bald and Golden Eagle Protection Act (BGEPA) and Migratory Bird Treaty Act (MBTA), as amended. The GECP for the Proposed Action may be used to support authorization by the USFWS of a programmatic permit for non-purposeful take of golden eagles under the BGEPA. As required by the GECP, post-construction monitoring for golden eagle (and California condor) in particular will commence in the first year of Project operation and continue for the life of the Project. To meet the requirements of USFWS *Eagle Conservation Plan Guidance* (USFWS, 2013), the GECP (WIL-1k1) will additionally identify eagle risk and an adaptive management strategy for the Project and compensatory mitigation; and post-construction monitoring and reporting procedures for golden eagles. The eagle risk assessment predicts the taking of 0.16 eagles annually, which means that during the30-year life of this project, more than one eagle is expected to be taken. Should an eagle be killed without the Project having a BGEPA permit, Project operations will be modified to ensure that additional eagles are not taken (WIL-1k31p: Minimize Eagle Mortality).

Burrowing Owl

While burrowing owls in the Project area have some exposure to turbine mortality, there have been no documented burrowing owl fatalities at wind energy facilities in the region. Studies in the Altamont Pass Wind Resource Area (e.g., Smallwood and Thelander, 2005) indicate that can be susceptible to collisions with WTGs. It is anticipated that any burrowing owl mortality that might occur over the Project life would be at a very low level and would have minor effects on burrowing owl populations. As required by WIL-1l, Implementation of the Bat and Bird Conservation Strategy (BBCS) would reduce Project-related impacts to burrowing owl.

California Condor

Based on the locations of known California condor sightings in close proximity to the project area, the level of risk associated with the Proposed Action to the California condor is considered to be moderate. It is conceivable for a California condor to soar into the Project area. While the ability of condors to avoid wind turbines is unknown, the hazards of wind turbines to other vulture species are well documented and these surrogate species demonstrate there is a mortality risk for California condors. However, to date, there are no known California condor deaths that have been attributed to wind turbines in the TWRA or elsewhere. As California condor numbers continue to increase in Southern California, including the Tehachapi Mountains, and their range expands, the risk of condor mortality from collisions with wind turbines increases.

If condors were to occur onsite, direct impacts from operation and maintenance could include disturbance from human activity, collision with WTGs, and collision with or electrocution from transmission lines. Other potential direct impacts would be similar to those discussed above for construction and include the loss or disruption of foraging habitat from vegetation removal or

grading, the introduction of hazardous microtrash and exposure to toxic ethylene glycol antifreeze that condors may ingest during operation and maintenance activities.

Indirect effects could result from the use of new access roads and subsequent increase in human activities; or, conversely, the attraction of condors to the site by roadkills resulting from normal site operations. A potential increase in carrion forage could result from mammal (e.g., rabbit, kit fox, or deer) collisions with vehicles or from avian interactions with WTGs. Condors would also be susceptible to collision with WTGs if grazing were to occur on the site during operation as birds could be attracted to the site by the presence of dead livestock. In each case, the presence of onsite food sources could attract condors and increase their risk of colliding with WTGs.

These potential direct and indirect impacts to California condors during operation and maintenance of the TWP would be reduced through the implementation of WIL-1h (California Condor Protection Measures), WIL-1i: Avoid California Condor Turbine Strikes, WIL-1j: California Condor Adaptive Management Strategy to Avoid Turbine Strikes, WIL-1l (Bird and Bat Conservation Strategy), WIL-1m (Wildlife Mortality Reporting Program), WIL-1o (Avian Power Line Interaction Committee Standards), WIL-3a (Minimize Vehicle and Equipment Impacts during Operation and Maintenance), and WIL-3b (Operation and Maintenance Education Program).

These measures include requirements for worker environmental awareness training, vehicle speed limits of 15 miles per hour, and control of fugitive dust. In addition, Measure WIL-1h requires monitoring during periods of livestock grazing to ensure immediate removal of livestock carcasses that could attract condors to the Project site and increase the potential for WTG strikes. The project proponent would also be required to work with the area grazing permittees to develop Best Management Practices to minimize attraction of condors to the Project area, such as removing livestock carcasses to an off-site location far enough from wind developments so as not to present a risk to condors foraging on the carcasses as well as making all watering troughs inaccessible to wildlife (covered, empty, etc.) during periods when grazing is not occurring.

Swainson's Hawk, Ferruginous Hawk, American Peregrine Falcon, American White Pelican, White-tailed Kite, Northern Harrier, Sharp-shinned Hawk, Merlin, and Vaux's Swift

Impacts to Swainson's hawk (*Buteo swainsoni*), ferruginous hawk, American peregrine falcon (*Falco peregrines anatum*), American white pelican (*Pelecanus erythrorhynchos*), white-tailed kite (*Elanus leucurus*), northern harrier (*Circus cyaneus*), sharp-shinned hawk (*Accipiter striatus*), merlin (*Falco columbarius*), and Vaux's swift (*Chaetura vauxi*) flying between 200 and 400 feet may also result during Project operation due to potential for collision with WTGs and power lines that could result in injury and/or direct mortality. American white pelicans in particular were observed flying within this height range during spring surveys of the Project area; however, American white pelican mortality has not been documented at any wind farm. Vaux's swift was observed in limited numbers during migration surveys. Vaux's swift is an aerial insectivore and frequently migrates at altitudes favorable for collision (197 to 410 feet).

At Altamont, California, monitoring has documented a decline in raptor mortality from collisions with wind turbines at large turbines, such as ones proposed to be built for the Proposed Action,

compared to small turbines (ICF, 2012). No mortality of these species was documented in the 19-month avian mortality study at the TWRA (Anderson et al., 2004). Thus, operation of the Proposed Action would not be expected to result in significant impacts to these species. As required by WIL-1l (Bird and Bat Conservation Strategy), implementation of the BBCS would reduce Project-related impacts to these species.

Cooper's Hawk and Prairie Falcon

Cooper's hawks and prairie falcons in the area might be at risk of collision with turbines; however, studies of raptor behavior have documented high raptor collision avoidance behaviors, noting that the diurnal flight of raptors may provide these birds with the ability to visually and acoustically detect turbines. It is also noted that raptor activity in the Project area during the fall of 2005 was among the lower passage rates (0.5 birds per 20-minute survey) as compared with other wind energy facilities in California. While it is possible that small numbers of fatalities of Cooper's hawks and prairie falcons could occur over the life of the Proposed Action, such events are expected to be rare. As required by WIL-1l, implementation of the BBCS would reduce Project-related impacts to these species.

Loggerhead Shrike and Le Conte's Thrasher

Loggerhead shrikes and Le Conte's thrashers in the area might be at risk of collision with turbines; however, due to the low level of use of the Project area by these species, mortality impacts are not expected to be substantial. As required by WIL-1l, implementation of the BBCS would reduce Project-related impacts to these species.

Avian Collision and Electrocution Risk from Transmission Lines

Overhead transmission lines have been found to pose a collision and electrocution risk for avian species, particularly for large, aerial perching birds, such as hawks and eagles, because of their large size, distribution, and behavior (APLIC, 2006). Because raptors and other large aerial perching birds often perch on tall structures that offer views of potential prey, the design of transmission poles or towers appears to be a major factor in raptor electrocution (APLIC, 2006). Electrocution occurs when a perching bird simultaneously contacts two energized phase conductors or an energized conductor and grounded hardware. 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). Current Avian Powerline Interaction Committee (APLIC) guidelines for constructing power lines have been developed to minimize the potential effects from bird strikes and electrocution. To reduce the effects associated with bird strikes and electrocution resulting from implementation of the TWP, power collection and transmission facilities will be designed to be raptor safe in accordance with the most recent APLIC guidance (*Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* and *Reducing Bird Collisions with Power Lines: The State of the Art in 2012*). Potential impacts associated with electrocution would be minimized through implementation of WIL-1o (Avian Power Line Interaction Committee Standards).

Avian Collision Risk from WTGs

Collision risk may occur to avian species that migrate, breed, or winter within the Project area, and at least some degree of avian mortality from collisions with turbines would be an unavoidable consequence of the operation of the Proposed Action. Collisions may occur with resident birds foraging and flying within the Project area or with migrant birds seasonally moving through the area. However, because overall avian use of the Project area is lower compared to many areas in southern California where avian species concentrate at wetlands, oases, or along ridgelines where avian species are known to migrate in moderate to high numbers, risk to migrating, breeding, or wintering passerine birds is expected to be relatively low at the Project area.

Based on the results of fatality monitoring at other wind facilities throughout the west, including the Tehachapi Wind Resource Area (TWRA) in California, the degree of collision risk to birds at wind facilities appears to be species specific except along important migration corridors. The Project area is not located along an important migration corridor. For example, fatalities of common ravens, turkey vultures, and ferruginous hawks are generally low, whereas fatalities of American kestrels, red-tailed hawks, golden eagles, and horned larks are more common. The selection of a wind power project site in a migration corridor, in specific types of habitat, number and diversity of birds in the area, and the behavior of an individual species plays a large role in its risk of collision.

Of the non-raptor avian groups, passerines constitute the most abundant avian fatalities at newer generation wind facilities, often comprising more than 80 percent of the avian fatalities (Erickson et al., 2001). It is estimated that about half of the passerine fatalities involve nocturnal migrants (Erickson et al., 2002). The overall national average for passerine fatalities at wind projects has been approximately 2.2 birds per turbine per year (Erickson et al., 2002).

Frequency indices of non-raptors indicate that the common raven, barn swallow, horned lark, and mountain bluebird are most likely to be exposed to potential collisions with wind turbines in the Project area, as these four species comprise nearly 74 percent of the total number of bird observations (includes repeat observations) recorded during the 2004–2005 survey season (Sapphos, 2011a; 2013). Despite relatively high use and exposure, common ravens are rarely reported as fatalities according to monitoring studies at other wind energy facilities (Erickson et al., 2001; 2002). At the TWRA, common ravens were found to be the most common large bird and comprised eight of 127 avian fatalities during a 1996 to 1998 study in the TWRA (Anderson et al., 2004). Most non-raptors had relatively low exposure indices due to the majority of individuals flying below the zone of risk. Because they tend to fly at relatively high altitudes, birds conducting long-range migrations may not be likely to be impacted by turbines except during weather conditions that induce them to fly low (Kerlinger, 1989).

Predicting numbers of fatalities is difficult in large part due to the lack of post-construction monitoring studies in the American Southwest and similar desert environments as the Proposed Action. However, due to generally low impacts for other western wind projects and the low exposure risks at the Project area, it is unlikely that populations of passerine bird species would be adversely affected by direct mortality from the operation of the Proposed Action. Thus, this level of mortality is not expected to result in population level impacts to any non-raptor avian

species with the possible exception of horned lark (*Eremophila alpestris*), as breeding and non-breeding individuals have been killed from collisions with wind turbines at many sites in western North America (Sapphos, 2011a). The horned lark is generally common in the Project area; species populations in the Mojave Desert lack any special-status designation by resource agencies.

Based on the mortality estimates from the other wind farms studied, the midrange expected for passerine mortality would be approximately 1.2 to 1.8 birds per turbine per year. To put this into context, an in-depth review of avian mortalities associated with collisions with human structures (roads, power lines, communication towers, buildings, and windows) suggests that about 0.01 to 0.02 percent of all avian mortalities are associated with wind turbines (Erickson et al., 2002). This equates to 1 to 2 out of every 10,000 bird deaths. Thus, operation of the Proposed Action would not be expected to result in significant impacts to these species.

Potential collision impacts to birds would be minimized though implementation of WIL-1f (Lighting Specifications to Minimize Bird and Bat Collisions), WIL-1h (California Condor Protection Measures), WIL-1i: Avoid California Condor Turbine Strikes, WIL-1j: California Condor Adaptive Management Strategy to Avoid Turbine Strikes, WIL-1k1 (Golden Eagle Conservation Plan), WIL-1k2 (Night Operations), WIL-1k3 (Minimize Eagle Mortality), and WIL-1l (Bird and Bat Conservation Strategy), WIL-1m (Wildlife Mortality Reporting Program), and WIL-1o (Avian Power Line Interaction Committee Standards).

Raptor Collision Risk from WTGs

Substantial data on raptor mortality at wind energy facilities are available from studies in California and throughout the West and Midwest. Exposure indices may provide some insight into what species might be the most likely turbine casualties based on site-specific data on abundance and flight behavior. Such indices would consider the relative probability of exposure based on abundance, proportion of activity recorded as flying, and observed flight height of each species. The analysis is based on observations of birds made during the studies and does not take into consideration varying ability among species to detect and avoid turbines, habitat selection, or other factors that may influence exposure to turbines such as breeding or hunting behavior. Based on species composition of the most common raptor fatalities at other western wind energy facilities, species composition of raptors observed during 2004 and 2005 surveys conducted of the Project area, and considering the exposure indices evaluated, the diurnal raptors most likely at risk of turbine collision would be the red-tailed hawk (*Buteo jamaicensis*), ferruginous hawk (*Buteo regalis*), golden eagle (*Aquila chrysaetos*), and American kestrel (*Falco sparverius*)(Sapphos, 2011a). Of these raptor species, only the red-tailed hawk is common in the Project area. Small numbers of fatalities of other raptors, including other falcons, accipiters, and harriers may also occur over the life of the Project, but are expected to be rare. Based on the seasonal use estimates, it is also expected that risk to raptors would be at lowest risk during the post-breeding period in summer when resources have been depleted and temperatures are very high, when very few raptors were observed, and highest during the fall and winter seasons, due to

increased number of migrants passing through the area and renewal of resource productivity brought upon by regular winter season rainfall and cooler temperatures (Sapphos, 2011a).

Studies of raptor behavior have documented high raptor collision avoidance behaviors, noting that the diurnal flight of raptors may provide these birds with the ability to visually and acoustically detect turbines. It is also noted that raptor activity in the Project area during the fall of 2005 was among the lower passage rates (0.5 birds per 20-minute survey) as compared with other wind energy facilities in California. Red-tailed hawk, turkey vulture, and American kestrel were the most commonly observed raptor species recorded during the 2004–2005 survey season, with red-tailed hawk as the most frequently observed raptor (Sapphos, 2011a).

Because the avian studies found that raptor use in the Project area is lower than at other wind farms operating in the region, raptor mortality may be lower than wind farms with similar turbine types. American kestrel and red-tailed hawk account for much of the raptor use at the site and are expected to be the species with the highest mortality. Golden eagle use of the site is low relative to other wind sites, and the mortality risk for golden eagles is also expected to be correspondingly low.

Potential collision risk impacts to birds would be minimized though implementation of WIL-1f (Lighting Specifications to Minimize Bird and Bat Collisions), WIL-1h (California Condor Protection Measures), WIL-1i: Avoid California Condor Turbine Strikes, WIL-1j: California Condor Adaptive Management Strategy to Avoid Turbine Strikes, WIL-1k1 (Golden Eagle Conservation Plan), WIL-1k2 (Night Operations), WIL-1k3 (Minimize Eagle Mortality), and WIL-1l (Bird and Bat Conservation Strategy), WIL-1m (Wildlife Mortality Reporting Program), and WIL-1o (Avian Power Line Interaction Committee Standards).

Special-Status Bats

The potential loss of resident and migratory special-status bats through collision with WTGs has the potential to impact individual special-status bats, though the magnitude of this potential effect on bat populations is not known. Collisions of migratory bats with wind turbines have been reported at wind farms in the United States (ICF, 2012).

While there are no known published studies of bat mortality at wind projects in the desert Southwest, other western projects including those in California have generally shown relatively low impacts. In California, bat fatality rates range from 0.24 fatalities per MW-year at the Alite Wind-Energy Facility (Kern County) to 3.92 fatalities/MW-year for the Shiloh I Wind Power Project (Solano County) (West, 2012). The Dillon Wind-Energy Facility in Riverside County, has comparable turbines to the Proposed Action and an estimated bat fatality rating of 2.17 fatalities per MW-year. Due to the poor understanding of bat populations in North America, the species and relative abundance of bats occurring within the Project area are difficult to determine. However, using the Dillon mortality rate based on the 60 MW rating for the Proposed Action, it could be reasonably projected that approximately 74 bats could be killed per year in the Project area. Hoary bats and silver-haired bats, which are likely to occur in the Project area, would be expected to represent the majority of wind turbine-related bat fatalities from operation of the Proposed Action. Hoary bats and silver-haired bats are widely distributed species that, in North

America, are found within most of the United States and parts of Canada and Mexico (Bolster, 2005 and Perkins, 2005).

Based on the available information, larger, less maneuverable, migrating species are primarily associated with wind turbine mortality events. In addition, those species, most notably hoary and silver-haired bats in the western United States, migrating in large colonies in late fall, make up the majority of fatalities observed and recorded. Although there have been limited quantifiable data about wind turbine/bat collision effects on bat populations, qualitative and circumstantial data suggest that turbine mortalities do not appreciably contribute to population declines, at least in the West (Sapphos, 2011a).

Based on species population factors and/or habitat use, the level of risk associated with the Proposed Action for the four sensitive bat species is considered to be low. While these bat species within the Project area would have some exposure to turbine mortality, there have been few documented fatalities of these species at wind energy plants in the region. Any mortality that might occur over the Project life would be at a low level and is unlikely to have an appreciable effect on populations of these species. Potential collision risk impacts to special-status bats would be minimized though implementation of WIL-1f (Lighting Specifications to Minimize Bird and Bat Collisions), WIL-1l (Bird and Bat Conservation Strategy), and WIL-1m (Wildlife Mortality Reporting Program).

American Badger, San Joaquin Pocket Mouse, and Southern Grasshopper Mouse

As discussed above, the American badger is intermittently present in the Project area and the San Joaquin Pocket Mouse and Southern Grasshopper Mouse are resident species in the Project area. Potential operational impacts to these species include direct impacts such as risk of mortality by vehicles and disturbance on access roads due to use by maintenance personnel, and increased predation due to the attraction of corvids such as ravens to the site. Direct and indirect impacts to resulting from operation and maintenance of the TWP would be reduced through the implementation of WIL-1m (Wildlife Mortality Reporting Program), WIL-3a (Minimize Vehicle and Equipment Impacts during Operation and Maintenance), WIL-3b (Operation and Maintenance Education Program), and WIL-3c (Raven Management Plan). These measures would require vehicle speed limits of 15 miles per hour, worker environmental awareness training, predator control measures, and a Wildlife Mortality Reporting Program.

Mohave Ground Squirrel

The TWP site is within the western edge of the Mohave ground squirrel's range, though no records exist within 15 miles of the Project area (CDFW, 2013). No impacts to Mohave ground squirrel are anticipated during the operation phase of the Project.

Wildlife Movement and Migration Corridors

Upon completion of construction, permanent fencing would be installed around portions of the TWP site identified in Figure 2-14, *Fencing Plan for the Proposed Tylerhorse Project*. At this time, the final fencing design has not been selected. Fencing of the TWP would have the potential to impede wildlife movement in the region. If the entire Project perimeter were to

be fenced, the TWP would present a minor barrier to the movement of some wildlife species. Because the Proposed Action is comprised of three separate, relatively small parcels, the complete fencing of each string unit can be achieved without creating a substantial barrier to wildlife movement.

Regardless of the configuration of fencing ultimately used, this fencing would likely permanently preclude access to some areas by larger terrestrial wildlife, but small animals would be able to pass under the fence as the bottom strand of smooth barbed wire would be a minimum of 18 inches above the ground (WIL-2b, Fencing Designs that Facilitate Wildlife Movement). This would minimize habitat fragmentation for small animals and some larger ones, as many species would still be able to pass under or over the fence. In addition, the Project site is not in an area that, either by topography or by habitat, is expected to "funnel" terrestrial wildlife movement into a defined corridor. Therefore, the TWP is not expected to substantially interfere with wildlife movement during operation and maintenance.

The construction of new WTGs and the installation of new above-ground transmission lines could interfere with aerial migratory movements of some birds or bats. Data from the TWP site and other nearby wind developments suggest a more diffuse pattern of avian migration in the region, and no focused bird or bat migratory corridors have been identified in the vicinity of the TWP. No surface water or riparian vegetation that may support focused use by migrating birds and bats occur on or near the site. Therefore, operation of the TWP is not expected to substantially interfere with any bird or bat movement or migration corridor. Implementation of WIL-1f (Lighting Specifications to Minimize Bird and Bat Collisions), WIL-1l (Bird and Bat Conservation Strategy), WIL-1o (Avian Power Line Interaction Committee Standards), and WIL-2b (Fencing Designs that Facilitate Wildlife Movement) would minimize impacts to migratory birds and bats in the AEWP area.

Local Policies or Ordinances Protecting Biological Resources

The TWP site is located on federal lands managed by the BLM, and as such, local policies and ordinances do not apply to these lands. Privately owned land surrounds the Project site, but there are no privately owned lands within the Project boundaries.

Decommissioning

Decommissioning and reclamation activities associated with the TWP would result in direct temporary and permanent losses of wildlife species habitats and indirect effects on habitats and species. These activities would include such tasks as vegetation removal, grading, and surface disturbance to remove the WTGs, above-ground electrical components, and substation components, as well as to remove below-ground infrastructure to a depth of three (3) feet. They also include surface disturbance to remove roads and to restore vegetation. It is expected that the impacts during decommissioning would be similar to those of construction of the TWP.

All mitigation measures that are required during construction of the TWP to avoid or minimize impacts to wildlife resources would also be required during decommissioning and reclamation activities (see Section 4.22.4).

Alternative 2 - Modified Proposed Action (37 WTGs)

Construction

Construction-related impacts to wildlife resources associated with Alternative 2 would be similar in type as those described above for Alternative 1, but the magnitude would be reduced in proportion to the reduction in Project size for Alternative 2. Mitigation for construction activities would be the same as for Alternative A.

Operation and Maintenance

Direct and indirect operations and maintenance impacts to wildlife resources associated with Alternative 2 would be similar in type as those described above for Alternative 1, but the magnitude would be reduced in proportion to the reduction in Project size for Alternative 2.

Decommissioning

Decommissioning activities associated with Alternative 2 would result in direct and indirect impacts to special-status wildlife and wildlife movement similar to decommissioning of Alternative A, but the magnitude would be reduced in proportion to the reduction in Project size associated with Alternative 2. Mitigation for decommissioning activities would be the same as for Alternative 1.

Alternative 3 - No Action Alternative

Under Alternative 3 (No Issuance of a ROW Grant; No LUP Amendment) to the TWP, no action would occur and existing conditions relevant to wildlife resources would continue, but may be altered at some point in the future by construction of a potential wind energy project or other type of development. No impacts associated with the TWP would occur.

Alternative 4 - No Project; Unsuitable

Under Alternative 4 (No Issuance of a ROW Grant; Approval of a LUP Amendment to Exclude Wind Energy Development on the Site of the Project), no action would occur and no future development of the site for wind energy would occur. Existing conditions relevant to biological resources would continue, but may be altered at some point in the future by construction of a potential project other than proposed wind energy development. No impacts associated with the TWP would occur under Alternative 4.

Alternative 5 - No Project; Suitable

Under Alternative 5 (No Issuance of a ROW Grant; Approval of a LUP Amendment to Make Site Available for Future Wind Energy Development), no action would occur but future development of the site for wind energy could occur. Existing conditions relevant to biological resources would continue, but may be altered at some point in the future by construction of a potential proposed wind energy development. No impacts associated with the TWP would occur under Alternative 5. Impacts to wildlife resources similar to those described for Alternative 1 would likely occur, but the specific types and magnitudes of impacts cannot be determined at this time.

4.21.3 Cumulative Impacts

Geographic Extent/Context

The geographic scope for the analysis of cumulative impacts related to wildlife resources includes the vicinity of all reasonably foreseeable cumulative projects and extends throughout the western Mojave Desert and Tehachapi and Piute Mountains including the TWRA, as shown in Figure 4.1-1. The Project area is located within or adjacent to federal and private lands that support native vegetation communities and are largely undeveloped or support wind energy developments. Areas of biological significance in the vicinity that have potential to be affected by the Proposed Action include the California Desert Conservation Area/West Mojave Plan Area, Middle Knob and Horse Canyon Areas of Critical Environmental Concern (ACECs), and BLM Limited Use Lands.

The analysis of cumulative effects considers a number of variables including geographic (spatial) limits, time (temporal) limits, and the characteristics of the resources being evaluated. The geographic scope of this analysis is based on the nature of the geography surrounding the Project area and the characteristics and properties of each resource. In addition, each project will have its own implementation schedule, which may or may not coincide or overlap with the Proposed Action's schedule. This is a consideration for short-term impacts from the Proposed Action. 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 Action.

A cumulative impact to wildlife resources would occur if the Proposed Action, combined with the reasonably foreseeable cumulative projects in the vicinity of each resource being evaluated, would result in: (1) special-status wildlife resources becoming limited in extent within the cumulative analysis area; (2) population declines of special-status wildlife resources within the cumulative analysis area; or (3) if compensation for those impacts cannot be achieved.

The specific geographic extent for the analysis of cumulative impacts to special-status wildlife resources is the western Mojave Desert and Tehachapi and Piute Mountains including the TWRA, with the following exceptions:

1. Desert tortoise— geographical analysis consists of the Western Mojave Recovery Unit for the Mojave population of the desert tortoise (USFWS, 2011b)

2. California condor— geographical analysis consists of the range of the Southern California population

Existing Cumulative Conditions

Numerous existing wind developments occur in the vicinity of the Project area, and scattered residential, commercial, and industrial developments including operating mines occur as well. Livestock grazing is common throughout the area. Areas to the south in Los Angeles County, such as Lancaster and Palmdale, are experiencing rapid urbanization. Urbanization, population growth, and continuing development pressure, particularly in the Antelope Valley portion of the

western Mojave Desert in Kern and Los Angeles Counties, have brought about substantial changes to, and effects on, natural resources. Consequently, modification, alteration, fragmentation, and/or destruction of habitat for special-status wildlife species, avian and bat mortality at existing wind energy developments, and interference with wildlife movement are occurring throughout the region. Future growth and development in the analysis area will likely continue these impacts.

Vegetation communities are largely similar in the analysis area and consist primarily of a variety of desert scrubs at lower elevations and Joshua tree and California juniper woodlands, montane scrubs, and oak and pine woodlands at higher elevations. Annual grasslands occur interspersed throughout these communities, and livestock grazing and off-highway vehicle use are prevalent in the region. These communities support many invertebrates and vertebrate wildlife species including amphibians, reptiles, birds, and mammals. Many of these species are federal or state listed or designated with another special-status. The most sensitive of species observed in the Project region that also occur elsewhere in the analysis area are desert tortoise, golden eagle, Swainson's hawk, burrowing owl, and Mohave ground squirrel. California condor has not been observed in the Project area or surrounding vicinity, but is known to occur in the Tejon area and the Tehachapi Mountains to the northwest of the Project area. The following are the existing wind energy systems, as presented in Table 4.1-1 (Section 4.1) of this Draft EIS:

1. Manzana Wind Energy Project
2. Alta–Oak Creek-Mojave Wind Project
3. Coram Brodie Wind Project
4. Pine Tree Wind Development Project
5. Sky River Wind Energy Facility

Reasonably Foreseeable Projects

Table 4.1-1 provides a listing of current and reasonably foreseeable projects, including other proposed or approved renewable energy projects; various BLM-authorized actions/activities; proposed or approved projects within the counties' jurisdictions; and other actions/activities that Lead Agencies consider reasonably foreseeable. 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 4.1-1, their effects were considered in the cumulative impacts analyses in this EIS. Because the geographic area of effect for cumulative impacts to wildlife resources includes the entire region, all projects presented in Table 4.1-1 are considered in the analysis of cumulative effects for the Proposed Action.

There are four (4) other projects in close proximity to the Project area that would result in impacts to special-status wildlife species. These projects also could result in interference with wildlife movement or migration. These projects are (Table 4.1-1; Figure 4.1-1):

1. 5,820-acre Manzana Wind Energy Project ;
2. 8,300-acre Pacific Wind Energy Project;

3. 1,325-acre Pacific Wind Infill Project; and
4. 6,739-acre Catalina Renewable Energy Project.

Also of particular note are development projects proposed on large tracts of land, which have the potential to reduce or eliminate large areas of native vegetation. Large-scale development projects in the cumulative study area include several large proposed wind and solar developments (e.g., the Avalon Wind Energy Project (10,000 acres), Alta Wind Infill II Project (9,780 acres), Rising Tree Wind Energy Project (4,019 acres), Alta Wind Energy Project (3,660 acres), and the Morgan Hills Wind Energy Project (3,604 acres), among others). Many of these projects would cause losses to native vegetation communities that support special-status wildlife species, and could interfere with wildlife movement.

Wind energy development within the analysis area is of special concern to resource agencies because of the potential to contribute to population declines of special-status avian and bat species through mortality due to collisions with turbines. There are 24 wind energy developments proposed or existing within the analysis area (Table 4.1-1). Five (5) of these projects are existing facilities; the remaining 19 projects are in the environmental review process or are under construction.

Construction, Operation and Maintenance, Decommissioning

Direct impacts to wildlife as a result of the Proposed Action include temporary and permanent loss of habitat along with the displacement and/or potential mortality of wildlife species that are poor dispersers such as tortoises, snakes, lizards, and small mammals. Mortality of avian and bat species would result from collision with WTGs during operation of the Proposed Action. Similarly, the list of cumulative projects implemented in undeveloped areas would have the potential to result in similar impacts, and the 23 additional wind development projects in the region would all pose risks to birds and bats as well. The combined effect of impacts to common wildlife species (i.e., species with no special status) from the Proposed Action and impacts of the cumulative projects is considered minor because these species are common and wide-ranging within the region.

The current and reasonably foreseeable projects within the cumulative impacts analysis area would also impact many of same special-status wildlife species as the Proposed Action, and include coast horned lizard, golden eagle, burrowing owl, California condor, Swainson's hawk, Cooper's hawk, sharp-shinned hawk, prairie falcon, American peregrine falcon, northern harrier, osprey, Vaux's swift, California horned lark, loggerhead shrike, Le Conte's thrasher, nesting birds, special-status bats, American badger, special-status mice. The Project would not affect desert tortoise or Mohave ground squirrel but these species are regionally subject to cumulative project effects. Impacts to these species would include direct loss of suitable habitat, direct loss of individuals, or indirect effects due to human disturbance or changes in habitat quality during construction, operation and maintenance, and decommissioning.

Desert Tortoise

Human activities within the analysis area continue to contribute to desert tortoise habitat degradation, fragmentation, and loss, as well as pose a direct risk of mortality to tortoises. However, approximately 70 percent of the lands surrounding the Project area within the range of the desert tortoise are administered by the BLM; therefore, any federal action on those lands will be subject to consultation under Section 7 of the ESA.

The Proposed Action is not anticipated to contribute substantially to cumulative effects on the desert tortoise. This assessment is based on the location of the Proposed Action within an area with poor to moderate habitat quality that supports a very low desert tortoise population west of the Project area. Furthermore, increases in public access and unauthorized off-highway vehicle use are not anticipated as a result of implementation of the Proposed Action. The Proposed Action would not contribute direct or indirect impacts to desert tortoise, and would not contribute to cumulative impacts to this species.

Golden Eagle

The Proposed Action, in combination with impacts associated with past, present, and future projects, would contribute to the cumulative impact to golden eagle because the collective impacts have a potential to reduce the extent and population size of golden eagle in the cumulative impacts analysis area and because compensation for those impacts may not be achievable. Although some of the current and reasonably foreseeable projects listed in Table 4.1-1 could result in impacts to golden eagle nest sites, the Proposed Action would not impact known golden eagle nest sites and, therefore, the Proposed Action would not contribute to cumulative impacts to known nest sites.

The magnitude of the Proposed Action's incremental contribution to the cumulative loss of golden eagle foraging habitat is small in relation to the size of the region. The Proposed Action's permanent impacts to foraging habitat in the Project area amounts to less than 0.1 percent of the available foraging habitat for the species within the cumulative impacts analysis area.

As described in Section 4.22.2, direct and indirect impacts to golden eagles associated with the TWP would be reduced with the implementation of VEG-1c (Weed Management Plan), VEG-3 (Habitat Restoration and Revegetation Plan), WIL-1a (Designated Biologist), WIL-1b (Biological Monitoring), WIL-1c (Worker Environmental Awareness Program), WIL-1e (Preconstruction Surveys for Special-Status Wildlife), WIL-1f (Lighting Specifications to Minimize Bird and Bat Collisions), WIL-1k3 (Minimize Eagle Mortality), WIL-1o (Avian Power Line Interaction Committee Standards), WIL-1p (Minimize Eagle Mortality), Measure WIL-2a (Preconstruction Surveys for Nesting Birds), and WIL-1i (Golden Eagle Conservation Plan). Implementation of these measures would reduce the TWP's contribution to this cumulative impact, but cumulative impacts to the golden eagle would remain due to the risk of collisions with WTGs from the TWP and other wind developments in the region. Cumulative impacts to golden eagles as a result of collision and electrocution are addressed below.

Burrowing Owl

The burrowing owl is found the length of California in appropriate habitats, but its numbers have been markedly reduced for at least the past 60 years by the conversion of grasslands, by other habitat destruction, and by the poisoning of ground squirrels, the species' primary prey. The Proposed Action and most of the current and reasonably foreseeable projects in the analysis area would impact the burrowing owl and have the potential to reduce the population size and extent of the species. For these reasons, the cumulative impact would be regionally significant. The magnitude of the Proposed Actions incremental contribution to the cumulative impact to burrowing owls is small given that there are approximately 20 to 50 pairs of owls that breed in the Antelope Valley (CDFG, 2003).

Several burrowing owls were observed over-wintering within grassland and open shrub habitats in the Project vicinity, but no nests were found. Direct and indirect impacts to burrowing owls associated with the Proposed Action would be reduced by the implementation of VEG-1c (Weed Management Plan), VEG-3 (Habitat Restoration and Revegetation Plan), WIL-1a (Designated Biologist), WIL-1b (Biological Monitoring), WIL-1c (Worker Environmental Awareness Program), WIL-1f (Lighting Specifications to Minimize Bird and Bat Collisions), WIL-1e (Preconstruction Surveys for Special-Status Wildlife), WIL-1g (Burrowing Owl Protection Measures), and WIL-1o (Avian Power Line Interaction Committee Standards). These measures would reduce the Proposed Action's contribution to this cumulative impact in the analysis area. Each of the existing and reasonably foreseeable projects in the analysis area would be required to provide mitigation to offset the loss of burrowing owl burrows and/or surrounding foraging habitat and would be required to avoid direct impacts to occupied burrows. These measures associated with the Proposed Action and the measures associated with the other current and reasonably foreseeable projects would minimize impacts to the species. Cumulative impacts to golden eagles as a result of collision and electrocution are addressed below.

California Condor

Human-related activities within the cumulative impact analysis area continue to threaten the California condor. These activities include illegal dumping, recreational shooting, and livestock grazing. As the purpose of the Proposed Action is to meet the regional demand for clean renewable energy, the Proposed Action is not expected to lead to an increase in the development of private lands locally. Approximately 70 percent of the lands surrounding the Project area within the range of the California condor are administered by the BLM; therefore, any federal action on those lands will be subject to consultation under Section 7 of the ESA.

Following the implementation of mitigation measures, the Proposed Action is not anticipated to significantly contribute to cumulative effects on the California condor. This assessment is based on the location of the Proposed Action within an area with no documented recent or historical use by the condor. In addition, increases in public access are not anticipated as a result of implementation of the Proposed Action. Direct and indirect impacts to California condor associated with the Proposed Action would be reduced by the implementation of VEG-1c (Weed Management Plan), VEG-3 (Habitat Restoration and Revegetation Plan), WIL-1a (Designated Biologist), WIL-1b (Biological Monitoring), WIL-1c (Worker Environmental Awareness

Program), WIL-1f (Lighting Specifications to Minimize Bird and Bat Collisions), WIL-1h (California Condor Protection Measures), WIL-1i: Avoid California Condor Turbine Strikes, WIL-1j: California Condor Adaptive Management Strategy to Avoid Turbine Strikes, and WIL-1o (Avian Power Line Interaction Committee Standards). Implementation of mitigation measures would reduce the Proposed Action's contribution to this cumulative impact on the California condor; however, a low risk would remain to condors from the Proposed Action. Cumulative impacts to California condors as a result of collision and electrocution are also addressed in the mitigation measures below.

Collision and Electrocution Risk

Resident and migratory bird and bat species are at risk of collision with Project features associated with the Proposed Action as well as past, current, and reasonably foreseeable projects in the cumulative analysis area. These features include such structures as WTGs, meteorological towers, and overhead transmission lines. Impacts to golden eagle, burrowing owl, California condor, and other special-status birds and bat species associated with the Proposed Action, combined with losses associated with past, present, and future projects are considered a cumulative impact to these bird and bat species because the impacts have the potential to limit the populations of the species within the cumulative impacts analysis area. For this reason, the impact would be considered significant. The Proposed Action and the other projects would be required to minimize potential collision risk by implementing mitigation measures. For the Proposed Action, these include: WIL-1f (Lighting Specifications to Minimize Bird and Bat Collisions), WIL-1g (Burrowing Owl Protection Measures), WIL-1h (California Condor Protection Measures), WIL-1i: Avoid California Condor Turbine Strikes, WIL-1j: California Condor Adaptive Management Strategy to Avoid Turbine Strikes, WIL-1k1 (Golden Eagle Conservation Plan), WIL-1k2 (Night Operations), WIL-1k3 (Minimize Eagle Mortality), WIL-1l (Bird and Bat Conservation Strategy), WIL-1m (Wildlife Mortality Reporting Program), WIL-1o (Avian Power Line Interaction Committee Standards), and WIL-3b (Operation and Maintenance Education Program). The implementation of the Project mitigation would reduce the Project contribution to this cumulative impact. Because avian and bat mortality cannot be eliminated during Project operation and maintenance, cumulative impacts would remain following implementation of these measures.

Overhead transmission lines associated with the Proposed Action and many of the other current and reasonably foreseeable projects also pose a collision and electrocution risk for avian species, particularly for large, aerial perching birds such as hawks and eagles, because of their large wingspan. Impacts to California condor, golden eagle, and raptors associated with the Proposed Action, combined with losses of individual birds from electrocution associated with past, present, and future projects are considered a cumulative impact to these species because the impacts have potential to limit the populations of the species within the cumulative impacts analysis area. For the Proposed Action, potential impacts associated with electrocution would be minimized through implementation of WIL-1o (Avian Power Line Interaction Committee Standards). The other current and reasonably foreseeable projects in the analysis area would be required to implement similar measures to reduce potential electrocution impacts. Implementation of the Project's mitigation measures would minimize the Project's contribution to this cumulative impact.

Displacement of Special-Status Bird and Bat Species

The Proposed Action has the potential to displace some special-status bird and bat species from the Project area. The 23 other existing and reasonably foreseeable projects in the analysis area would also potentially displace special-status avian and bat species in the region. Although similar undeveloped habitats are abundant in the region, these habitats may reach carrying capacity if multiple projects displace birds and bats into adjacent areas, which could result in population declines. In addition, compensation for such impacts may not be achievable. This would result in a cumulatively considerable impact. Indirect impacts associated with avian displacement from the Project area would be mitigated by implementing WIL-1l (Bird and Bat Conservation Strategy). The other current and reasonably foreseeable wind energy projects would likely be required to implement similar mitigation to reduce potential displacement impacts. Implementation of the Project's mitigation measures would reduce the Proposed Action's contribution to this cumulative impact.

Mohave Ground Squirrel

Activities within the analysis area continue to contribute to Mohave ground squirrel habitat degradation, fragmentation, and loss, as well as pose a direct risk of mortality to this species. Based on survey findings, the Proposed Action will not contribute substantially to cumulative effects on the Mohave ground squirrel. This assessment is based on the location of the Proposed Action within an area with poor to moderate habitat quality, and at the western end of the historic range for this species. Multiple trapping studies have been conducted on and near the Project area in recent years, and all have been negative for this species. Furthermore, increases in public access and unauthorized off-highway vehicle use from implementation of the Proposed Action are not anticipated. Therefore, the Proposed Action would not cumulatively contribute to impacts to Mohave ground squirrel.

Special-Status Bat Species

Direct and indirect impacts to special-status bats associated with the Proposed Action, combined with impacts associated with past, present, and future projects are considered a cumulative impact because the impacts have the potential to reduce the extent and population size of one or more of these species in the cumulative impacts analysis area and because compensation for those impacts may not be achievable. Although some of the current and reasonably foreseeable projects listed in Table 4.1-1 could result in impacts to bat roost sites, the Proposed Action would not impact any known roosts.

Bat use of the Project area was found to be relatively low, and the permanent loss of a small amount of foraging habitat would not contribute substantially to a cumulative loss of foraging habitat for bats in the region. Direct and indirect impacts to special-status bats could be reduced by implementation of WIL-1e (Pre-construction Surveys for Special-status Wildlife) and WIL-1l (Bird and Bat Conservation Strategy). Implementation of these measures would reduce the Project's contribution to this cumulative impact. Cumulative impacts to special-status bats as a result of collision and electrocution were previously discussed.

Other Special-Status Species

Direct and indirect impacts to coast horned lizard, other special-status avian species (e.g., Swainson's hawk, Cooper's hawk, sharp-shinned hawk, prairie falcon, American peregrine falcon, northern harrier, American white pelican, Vaux's swift, ferruginous hawk, Merlin, and Le Conte's thrasher), nesting birds (e.g., loggerhead shrike), special-status mice, and American badger associated with the Project area combined with impacts associated with past, present, and future projects are not considered a cumulative impact to any of these species because the impacts are not expected to reduce the extent or population size of these species in the cumulative impacts analysis area.

Wildlife Movement and Migration Corridors

The Proposed Action has the potential to disrupt wildlife movement through the Project area and could cumulatively affect wildlife movement throughout the region, specifically the Tehachapi Connection. Although birds and bats migrate through the region, no known concentrated migration corridors exist in the Project area. Wildlife movement would be disrupted during construction due to avoidance of construction activities and temporary barriers to movement such as fencing. Permanent fencing would obstruct movement of many large animals during operation of the Proposed Action, but small animals and even some larger ones would be able to pass under such fencing. Other development projects, including wind developments, energy infrastructure, and residential and commercial developments within the geographic scope of this analysis, would also disrupt wildlife movement to varying degrees. For example, transmission lines would not present appreciable barriers to movement as wildlife can move around and in between towers, but any residential and commercial developments could present obstacles to movement with associated species displacement. Impacts to wildlife movement across the Project area could be mitigated by implementation of WIL-1f (Lighting Specifications to Minimize Bird and Bat Collisions), WIL-1o (Avian Power Line Interaction Committee Standards),WIL-2b (Fencing Designs that Facilitate Wildlife Movement). The implementation of these measures could reduce the Proposed Action's contribution to this cumulative impact, but some residual impacts to movement may remain.

4.21.4 Mitigation Measures

The following measures shall be implemented to avoid or reduce impacts to wildlife species from construction, operation and maintenance, and decommissioning of the Proposed Action. Prior to construction, the following plans shall be submitted to the appropriate agencies for review and approval:

1. Worker Environmental Awareness Program
2. Wildlife Mortality Reporting Program
3. California Condor Adaptive Management Strategy
4. Golden Eagle Conservation Plan (Project Proponent submitted a Draft Eagle Conservation Plan to agencies for review on March 23, 2011)

5. Bird and Bat Conservation Strategy (Project Proponent submitted a Draft Bird and Bat Conservation Strategy to agencies for review on April 28, 2011)
6. Raven Management Plan
7. Post-Construction Bird and Bat Species Mortality Monitoring Program
8. Burrowing Owl Mitigation and Monitoring Plan (if passive relocation of burrowing owls is proposed)

Construction, Operation, and Decommissioning

The following mitigation measures are designed to avoid or reduce impacts to wildlife species during construction, operation, and decommissioning of the Proposed Action.

WIL-1a: Compliance Monitoring by the Designated Biologist. Prior to ground-disturbing activities, an individual shall be designated and approved by the BLM and Resources Agencies (USFWS, and CDFW, as appropriate) as a Designated Biologist (i.e., field contact representative). At a minimum, the Designated Biologist shall have:

1. A Bachelor's degree with an emphasis in ecology, natural resource management, or related science;
2. at least three (3) years of experience in field biology or a current certification of a nationally recognized biological society such as The Ecological Society of America or the Wildlife Society;
3. previous experience with applying terms and conditions of a Biological Opinion; and
4. an appropriate permit and/or training if conducting focused or protocol surveys for listed or proposed species.

The Designated Biologist shall be employed for the period during which on-going construction and post-construction monitoring and reporting by an approved biologist is required, such as annual reporting on habitat restoration and post-construction avian and bat mortality monitoring. Each successive Designated Biologist shall be approved by the BLM's Authorized Officer. The Designated Biologist shall have the authority to ensure compliance with all measures set forth in the Biological Opinion and 2081 take authorization and with all mitigation measures included herein, and will be the primary agency contact for the implementation of these measures. The Designated Biologist will have the authority and responsibility to halt any Project activities that are in violation of the terms of the Biological Opinion, 2081 take authorization, or Project mitigation measures. A list of responsibilities of the Designated Biologist is summarized below.

To avoid and minimize effects to biological resources, the Designated Biologist shall:

1. Notify the BLM's Authorized Officer and USFWS at least 14 calendar days before initiating ground-disturbing activities.
2. Immediately notify the BLM's Authorized Officer in writing if the Project Proponent does not comply with any of the mitigation measures or terms of the Biological Opinion and/or the 2081 take authorization including, but not limited to, any actual or anticipated failure to implement such measures within the periods specified.
3. Conduct compliance inspections daily during on-going construction as clearing, grubbing, and grading are completed, and submit a monthly compliance report to BLM's Authorized Officer until construction is complete.

WIL-1b: Biological Monitoring during Construction. Biological Monitor(s) shall be employed to assist the Designated Biologist in conducting pre-construction surveys and monitoring ground disturbance, grading, construction, operations and maintenance, decommissioning, and restoration activities. The Biological Monitor(s) shall have sufficient education and field experience to understand resident wildlife species biology, have experience conducting desert tortoise, burrowing owl, and American badger field monitoring, and be able to identify these species and their sign (including active burrows). The Designated Biologist shall submit a resume, at least three (3) references, and contact information for each prospective Biological Monitor to the BLM, and the Wildlife Agencies for approval. To avoid and minimize effects to biological resources, the Biological Monitor(s) will assist the Designated Biologist with the following:

1. Be present during construction activities that take place in suitable habitat for desert tortoise, burrowing owl, and American badger to prevent or minimize harm or injury to these species.
2. Activities of the Biological Monitor(s) include, but are not limited to, ensuring compliance with all avoidance and minimization measures, monitoring for desert tortoise, burrowing owl, and American badger, and halting construction activity in the area if an individual is found, and checking the staking/flagging of all disturbance areas to be sure that they are intact and that all construction activities are being kept within the staked/flagged limits. If a desert tortoise, burrowing owl, or American badger is found within a work area, the Biological Monitor(s) shall immediately notify the Designated Biologist, who shall determine measures to be taken to ensure that the individual is not harmed.
3. Inspect the Project area for any special-status wildlife species.
4. Ensure that potential habitats within the construction zone are not occupied by special-status species (e.g., potential burrows/nests are inspected).
5. In the event of the discovery of a non-listed, special-status ground-dwelling animal, recover and relocate the animal to adjacent suitable habitat within the

Project site at least 200 feet from the limits of construction activities. The Biological Monitor(s) shall relocate any coast horned lizards found within a project impact area to suitable habitat at least 200 feet outside the impact area.

6. At the end of each work day, inspect all potential wildlife pitfalls (e.g., trenches, bores, other excavations) for wildlife and remove wildlife as necessary. If the potential pitfalls will not be immediately backfilled following inspection, the Biological Monitor(s) will ensure that the construction crew slopes the ends of the excavation (3:1 slope) to provide wildlife escape ramps or will ensure that the construction crew completely and securely covers the excavation to prevent wildlife entry.
7. Inspect the site to help ensure trash and food-related waste is place in closed-lid containers and to ensure that workers do not feed wildlife. Also inspect the work area each day to ensure that no microtrash (bolts, screws, etc.) is left behind.

WIL-1c: Worker Environmental Awareness Program. Prior to Project initiation, the Designated Biologist shall develop and implement a Worker Environmental Awareness Program that shall be available in English and Spanish. Wallet-sized cards summarizing the information shall be provided to all construction and operation and maintenance personnel. The Worker Environmental Awareness Program shall include the following:

1. An explanation of the sensitivity of the vegetation communities and special-status plant and wildlife species within and adjacent to work areas, and proper identification of these resources.
2. Biology and status of the desert tortoise, California condor, golden eagle, burrowing owl, Swainson's hawk, other nesting birds, and American badger and measures to reduce potential effects to these species.
3. Actions and reporting procedures to be used if desert tortoise, California condor, golden eagle, burrowing owl, Swainson's hawk, other nesting birds, or American badger are encountered.
4. An explanation of the function of flagging that designates authorized work areas.
5. Driving procedures and techniques to reduce mortality of wildlife on roads.
6. 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. The importance of avoiding the introduction of invasive weeds into the Project area and surrounding areas.
8. A discussion of general safety protocols such as hazardous substance spill prevention and containment measures and fire prevention and protection measures.

9. A review of mitigation requirements.

WIL-1d: Speed Limits. Speed limits along all access roads shall not exceed 15 miles per hour to minimize dust during construction and operations and maintenance activities.

WIL-1e: Pre-construction Surveys for Special-status Wildlife. Prior to the issuance of grading or building permits, the Project Proponent shall conduct the following pre-construction surveys:

Swainson's Hawk: To ensure that nesting Swainson's hawks are not disturbed by construction activities, the Project Proponent shall submit written documentation to BLM and CDFW showing that a qualified ornithologist has conducted a pre-construction nesting survey within one-half (1/2) mile of the Project in areas with potentially suitable nesting habitat for Swainson's hawks no more than 30 days prior to commencement of construction. If a nest site is found, consultation with CDFW shall be required to ensure Project construction will not result in nest disturbance. No new disturbances or other Project-related activities that may cause nest abandonment or forced fledging shall be initiated within one-half (1/2) mile of an active nest between March 1 and September 15, or unless otherwise authorized by BLM. These buffer zones may be adjusted as appropriate in consultation with a qualified ornithologist and BLM. If impacts to nesting Swainson's hawks cannot be avoided, BLM and CFDW shall be consulted regarding the potential for incidental take authorization from CDFW.

Nest trees for Swainson's hawks within the Project shall not be removed. If a nest tree for a Swainson's hawk must be removed, authorization (including conditions to offset the loss of the nest tree) must be obtained from the BLM and CDFW. If construction or other Project-related activities that may cause nest abandonment by a Swainson's hawk or forced fledging occur, the work shall be halted until the birds have fledged.

American Badger: The Project Proponent shall submit written documentation to BLM and CDFW showing implementation of pre-construction surveys for American badger within suitable habitat. If present, occupied badger dens shall be flagged and ground-disturbing activities avoided within 50 feet of the occupied den. Active maternity dens shall be avoided during pup-rearing season (February 15 through July 1) and a minimum 200-foot buffer established. Maternity dens shall be flagged for avoidance, identified on construction maps, and a Biological Monitor shall be present during construction.

If avoidance of a non-maternity den is not feasible, badgers shall be passively relocated by slowly excavating the burrow (either by hand or mechanized equipment under the direct supervision of the biologist, removing no more that 4 inches at a time) before or after the rearing season (February 15 through July 1). Any relocation of badgers shall occur only after consultation with the BLM and the Designated Biologist. A written report documenting the badger removal shall be provided to BLM and CDFW within 30 days of

relocation. Dens that are determined to be inactive by the Designated Biologist shall be collapsed by hand to prevent occupation of the den between the time of the survey and construction activities.

Bats: The Project Proponent shall conduct a survey for roosting bats prior to any ground disturbance in all areas within 200 feet of rocky outcrops, large trees, or any other habitat capable of supporting roosting bats. The Project Proponent shall also conduct surveys for roosting bats during the maternity season (March 1 to July 31) within 300 feet of Project activities near rocky outcrops or other habitat capable of supporting bat nursery colonies. These areas shall be surveyed by a qualified bat biologist. Surveys shall include a minimum of one (1) day and one (1) evening visit. If active maternity roosts or hibernacula are found, the rock outcrop or tree occupied by the roost shall be avoided (i.e., not removed) by the Project, if feasible. If avoidance of the roost is not feasible, the bat biologist shall survey (through the use of radio telemetry or other methods approved by BLM) for nearby alternative maternity colony sites. If the bat biologist determines, in consultation with and with the approval of BLM, that there are alternative roost sites used by the maternity colony and young are not present, then no further action is required. However, if there are no alternative roost sites used by the maternity colony, provision of substitute roosting bat habitat is required. If active maternity roosts are absent, but a hibernaculum (i.e., a non-maternity roost) is present, then exclusion of bats prior to demolition of roosts is required.

If an active maternity roost is located in an area to be impacted by the Project, and alternative roosting habitat is available, the demolition of the roost site must commence before maternity colonies form (i.e., prior to 1 March) or after young are flying (i.e., after 31 July) using the exclusion techniques described above.

WIL-1f: Lighting Specifications to Minimize Bird and Bat Collisions. The Project Proponent shall minimize night lighting during construction by using shielded directional lighting that is pointed downward, thereby avoiding illumination to adjacent natural areas and the night sky.

Prior to the issuance of grading permits, and to reduce collisions of avian and bat species with turbines, the Project Proponent shall submit written documentation to BLM and USFWS demonstrating coordination with the Federal Aviation Administration to minimize the number of wind turbine generators and meteorological towers that require night lighting and to use lighting that would minimize attraction of birds and bats to the Project area. The Project Proponent shall utilize only red, or dual red and white strobe, strobe-like, or flashing lights, not steady burning lights, to meet Federal Aviation Administration requirements for visibility lighting of WTGs, permanent met towers, and communication towers. Only a portion of the turbines within the wind project should be lighted, and all pilot warning lights should fire synchronously.

All exterior lighting at operation and maintenance facilities, substations, and appurtenant structures located within one-half mile of the turbines shall be of the lowest illumination required for security and human safety. The Project Proponent shall install and continuously use and maintain lights with motion or heat sensors and switches to keep lights off when not required. Light fixtures shall be fully shielded and directed downward to minimize illumination above the horizontal plane. The Project Proponent shall minimize use of high-intensity lighting, steady-burning, or bright lights such as sodium vapor, quartz, halogen, or other bright spotlights. Nighttime vehicle traffic associated with Project activities shall be kept to a minimum volume and speed to prevent mortality of nocturnal wildlife species.

WIL-1g: Burrowing Owl Protection Measures. No more than 30 days prior to the start of construction, a pre-construction survey for burrowing owls, in conformance with the CDFW *Staff Report on Burrowing Owl Mitigation* (CDFG, 2012), shall be completed within suitable habitat at every work area and within a 150-meter buffer zone of each work area. The Project Proponent shall submit the results of the pre-construction survey to BLM's Authorized Officer and CDFW. The Project Proponent shall also submit evidence of conformance with federal and State regulations regarding the protection of the burrowing owl by demonstrating compliance with the following:

1. Unless otherwise authorized by BLM and CDFW, no disturbance shall occur within 160 feet (50 meters) of occupied burrows during the non-breeding season (September 1 through January 31) or within 650 feet (500 meters) during the breeding season (February 1 through August 31).
2. Occupied burrows shall not be disturbed during the nesting season (February 1 through August 31). In the event that an occupied burrow absolutely cannot be avoided (e.g., due to physical or safety constraints), passive relocation of owls may be implemented prior to construction activities only if a qualified biologist approved by BLM verifies through non-invasive methods that either the birds have not begun egg-laying and incubation or that juveniles from the occupied burrows are foraging independently and are capable of independent survival. Eviction outside the nesting season may be permitted pending evaluation of eviction plans (developed in accordance with BLM protocol for burrowing owls) by CDFW and receipt of formal written approval from BLM authorizing the eviction. A Burrowing Owl Mitigation and Monitoring Plan shall be submitted to the BLM's Authorized Officer and CDFW for review and approval prior to passive relocation.
3. Unless otherwise authorized by BLM, a 650-foot buffer, within which no activity will be permissible, will be maintained between Project activities and nesting burrowing owls during the nesting season. This protected area will remain in

effect until August 31 or at BLM's discretion and based upon monitoring evidence, until the young owls are foraging independently.

4. If accidental take (disturbance, injury, or death of owls) occurs, the Designated Biologist will be notified immediately.
5. Impacts to active burrowing owl territories shall be mitigated at a 1:1 ratio through a combination of off-site habitat compensation and/or off-site restoration of disturbed habitat capable of supporting this species. The acquisition of occupied habitat off-site shall be in an area where turbines would not pose a mortality risk. Acquisition of habitat shall be consistent with the California Department of Fish and Game's *Staff Report on Burrowing Owl Mitigation* (CDFG, 2012). The preserved habitat shall be occupied by burrowing owl and shall be of superior or similar habitat quality to the impacted areas in terms of soil features, extent of disturbance, habitat structure, and dominant species composition, as determined by a qualified ornithologist. The site shall be approved by BLM. Land shall be purchased and/or placed in a conservation easement in perpetuity and managed to maintain suitable habitat. The offsite area to be preserved can coincide with off-site mitigation lands for permanent impacts to sensitive vegetation communities, with the approval of the BLM and CDFW.

WIL-1h: California Condor Protection Measures. Prior to the issuance of grading or building permits, the Project Proponent shall submit written documentation to BLM's Authorized Officer of the following regarding California condor:

1. Workers will be trained on the issue of microtrash — what it is, its potential effects to California condors, and how to avoid the deposition of microtrash. In addition, daily sweeps of the work area will occur to collect and remove trash. All spills of ethylene glycol will be cleaned up immediately and a report documenting the actions taken to remediate the spill will be provided to BLM, USFWS, and CDFW within five (5) calendar days of the incident.
2. As part of the Worker Environmental Awareness Program (Measure WIL-1c), the Project Proponent shall develop a flier that will be distributed to all workers on the Project concerning information on the California condor. Information to be included consists of the following: species description with photos and/or drawings indicating how to identify the California condor and how to distinguish condors from turkey vultures and golden eagles; protective status and penalties for violation of the federal and California Endangered Species Acts; avoidance measures being implemented on the Project; and contact information for communicating condor sightings. A copy of the flier shall be submitted to the BLM's Authorized Officer to demonstrate compliance with this mitigation.

3. During periods of livestock grazing, a full-time monitor shall be present to ensure immediate removal of carcasses on the Project site. These practices shall include a full-time monitor during periods of livestock grazing that will be present to ensure immediate removal of carcasses from the Project site to an off-site location far enough from wind developments so as not to present a risk to condors foraging on the carcasses. The monitor shall also assist in designating an area for burial of carcasses or, alternatively, assist the rancher in removing the carcasses to the nearest County landfill site that accepts dead livestock. The Project proponent shall also ensure that the monitor is verifying that all watering troughs are inaccessible to wildlife (covered, empty, etc.) during periods when grazing is not occurring.

WIL-1i: Avoid California Condor Turbine Strikes. Prior to the issuance of a Notice to Proceed by the BLM, the Project owner shall submit written documentation to the BLM, CDFW, and the USFWS showing that the specified measures to avoid and minimize impacts to California condor from turbine activities have been implemented:

1. The Project owner shall submit for review and approval a Condor Monitoring and Avoidance Plan that provides the details of a system that will detect and avoid condors in the Project vicinity. The system currently being described is a Very High Frequency (VHF)-based condor monitoring system named the Remote Condor Observation Network (ReCON) that has the capability to detect VHF-tagged condors at least 16 miles from the detection station. The system transmits an alert that prompts a response from Project personnel when a VHF-tagged condor approaches within a 5-mile perimeter of Project turbines. This system is augmented by human observation at a 2-mile perimeter of Project turbines. The purpose of this plan is to outline the procedures and steps to be undertaken by the Project owner to implement focused curtailment of wind turbine generators if a California condor is detected within 2-mile perimeters of Project turbines. The plan will also describe an alternative detection system(s) that are being developed to reliably detect condors if the Southern California flock is no longer marked with VHF transmitters.
2. The Condor Monitoring and Avoidance Plan shall be implemented and demonstrated to be effective and fully operational prior to initiation of turbine testing and operations and shall remain fully operational during daytime hours, which includes 30 minutes prior to sunrise and 30 minutes after sunset, for the life of the Project or until an effective alternate detection system is put in place.
3. The Project owner will create a Condor Initial Response Team (CIRT) that will be comprised of the qualified biologist, two operations staff, and the Project supervisory control and data acquisition (SCADA) operator. The Project biologist will be designated as the CIRT lead. Multiple teams will be created to

work in shifts to provide full-time coverage from 30 minutes before sunrise to 30 minutes after sunset. Each member of the CIRT shall be trained in the operation of the ReCON System and will be available to respond to any system alerts. Training will consist of ReCON system and equipment familiarity, and practice with: 1) California condor identification and ocular equipment use; 2) deployment to preselected vantage points; 3) communication protocols during response procedures; and 4) completion of response forms. The qualified biologist shall coordinate the response and the SCADA operator will maintain a notification response form detailing each condor detection within the 5-mile detection perimeter and response actions taken. This form will include information on any curtailments, including the duration of curtailments and the number of turbines affected, and information on the condor(s) that triggered the system. These forms will be submitted to the agencies as described in 10(g).

4. A qualified biologist who is approved by BLM and USFWS shall staff a biological observation building full-time during daylight hours for the life of the Project or until such time as a BLM- and USFWS-approved alternative detection system for California condors that replaces the need for the observer is in operation on the Project site. The location of the observation building will be selected to maximize the building's viewshed in concert with preselected vantage points on the Project property that will be used by additional CIRT members for visual confirmation of condors during system alerts, to provide 100 percent visual coverage of the 2-mile perimeter of Project turbines. This biologist shall implement full-time observation, during daylight hours, for California condor activities on the Project site and a 2-mile perimeter of Project turbines to ensure that if condors (with or without an attached VHF transmitter) are sighted or detected via ReCON within the 2-mile perimeter of Project turbines, turbines can be curtailed prior to the condor being in danger of being struck by a turbine. Although the qualified biologist will be on high alert and continually scanning the Project area for visual sightings of condors as soon as a condor is detected within the 5-mile perimeter by the ReCON system, two miles is approximately the furthest distance at which an aided human eye can detect a condor. The qualified biologist will have direct communication with the Project SCADA operator controlling the Project turbines. As condors will generally only be visible to humans around the 2-mile distance, the qualified biologist would have authority to immediately curtail all Project turbine operations after visual confirmation of one or more condors within or just beyond the 2-mile perimeter of Project turbines.

5. The Project's ReCON detection system will be capable of detecting all VHF-tagged condors within the southern California flock that are within 16 miles of the system; however, the exact detection distance in each direction will be determined by the local topography and atmospheric conditions/weather.

6. All ReCON detection events are recorded and stored; however, CIRT and SCADA response procedures shall be initiated only when a condor is detected within a 5-mile perimeter of Project turbines. This 5-mile perimeter roughly corresponds with the predominant northeast to southwest running ridge encompassing the peak of Covington Mountain.
7. The components, efficacy, and technological details of the ReCON System will be further described in a Normandeau Associates, Inc.'s technical report that will be submitted to the BLM and USFWS for their records. The ReCON System shall include, at a minimum, the following components:
    a. VHF detection stations that shall consist of antenna towers, VHF receivers, an antenna switchbox with amplifier, unidirectional antennas, and a computer (which also acts as a datalogger) with Internet and SCADA connections.
    b. Two VHF detection stations that would maximize coverage of the Project site and avoid blind spots that would allow a VHF-tagged California condor to enter the 5-mile detection perimeter around the Project turbines and remain undetected. The qualified biologist will provide an additional level of detection as condors approach the 2-mile detection perimeter around Project turbines.
    c. An appropriate number of VHF detection receiver station components that would allow for scanning through all California condor (Southern California flock) VHF frequencies within 2 minutes. Each VHF detection station will have four unidirectional antennae installed. All 4 antennas are simultaneously connected to all the receivers, providing north, east, south, and west signal strength on received signals. While scanning through the frequency list, the receivers first listen on all 4 antennas simultaneously. If no signal is received they move to the next frequency in the list. The total frequency list is split into portions for each receiver, such that by using multiple receivers, the entire frequency list can be cycled through in 2 minutes.
    d. If a condor signal is received, the receivers then cycle through each antenna individually, to get the signal strength in each direction. However, after that initial fix, the receivers continue to scan for each bird at the standard rate of about once every 2 minutes.

        When a condor is detected within the 5-mile detection perimeter, the frequency number for that bird will be communicated in real time to the dedicated fourth receiver. This receiver will scan for and monitor condors within the 5-mile detection perimeter of Project turbines only. This will permit a detection rate of every 5 seconds, as it takes

approximately 5 seconds for the antenna to lock onto the signal and get a high quality reading. Every 20 seconds, after all four antennas report, the system's algorithm can be updated. The purpose of the algorithm is to calculate an approximate distance and direction of the condor from the detection stations to allow for faster detection by biologists and a failsafe curtailment by the SCADA operator, if ReCON detects a condor within the 2-mile perimeter, as described further in 7(g) below.[1]

The current system design allows for up to 12 detection events per minute (and up to 3 locations estimated by the algorithm) for a single condor with 5 miles. If more than one condor is within the 5-mile detection perimeter, the 4th receiver could be programmed to scan for each condor in turn; this will reduce the number of detection events reported per condor per minute. The CIRT, however, already will be on high alert because of the presence of a single condor within the 5-mile detection perimeter.

e. VHF transmitters of known frequency (e.g. beacons) for qualification testing, response procedure testing, and for use as a sentinel signal

f. Equipment that automatically notifies the CIRT (via electronic mail [email] and/or text notification messages, or any other agency approved communication methods) that a California condor is within the 5-mile detection perimeter around the Project turbines. If the condor remains within the 5-mile detection perimeter, the ReCON system will continue to notify the CIRT of the bird's presence. The SCADA operator and members of the CIRT shall continually monitor visual and ReCON alert information (i.e., VHF frequency, signal direction, and strength) specific to any California condor locations.

g. The ReCON system will have a direct link to the SCADA system for redundancy. When a condor signal is detected by the ReCON system, information on signal strength and direction for each antenna will be instantaneously run through the algorithm to calculate an approximate distance and direction of the condor from the detection stations. If the distance calculated is within the 5-mile perimeter of Project turbines, this information will be immediately transmitted to the CIRT team via the

[1] An algorithm is a step by step procedure for calculations. Algorithms are used for calculation, data processing, and automated reasoning. It is a finite list of well-defined instructions for calculating a function. Starting from an initial state and initial input the instructions describe a computation that, when executed, proceeds through a finite number of well-defined successive states, eventually producing "output" and terminating at a final ending state. In this instance the initial input is the signal strength information received from as many as 8 antennae across 2 ReCON stations. The combination of these parameter values should allow for categorization of a VHF-tagged condor as being in one of 12 quadrants (N, S, E, or W and <2, 2 to 5, >5 miles). The output value is then transmitted to the SCADA and CIRT.

approved agency communication methods and to the Project owner's National Control Center (NCC) in Portland, Oregon, through a Modbus system. This should allow for faster visual detection of condors by the Project biologist, who will be able to give the curtailment command if a condor is visually observed entering the 2-mile perimeter of Project turbines. However, as a fail-safe mechanism, turbines can also be curtailed by the SCADA operator if the VHF detection system detects condors flying within the 2-mile perimeter of Project turbines.

8. The CIRT notification response procedures shall include, but not be limited to, the following:

    a. Curtailment of turbines shall commence at the time a California condor comes within the 2-mile perimeter of any Project turbine. Curtailment commands may be given for specific sectors or for all sectors of the wind facility at the discretion of the qualified biologist.

    b. Identified turbines shall be curtailed to a tip speed equal to or less than 15 miles per hour (mph) within 2 minutes of any curtailment command. Tip speed shall be further reduced to 3 mph by yawing the turbine.

    c. If a VHF signal from a California condor is detected by ReCON within the 5-mile detection perimeter of Project turbines it will send an alert message (Table 4.21-1, *Summary of Response Actions Related to ReCON Detection of Condors*). Upon notification of a condor detection within the 5-mile perimeter of Project turbines, or, if a condor is sighted by members of CIRT in the vicinity of the Project, CIRT members will enter response mode. The Project biologist will remain in the observation building to coordinate the response and continue to monitor ReCON detections and visual sightings. Upon receiving notification, all additional CIRT members will immediately dispatch to preselected vantage points throughout the Project property that in combination offer 100 percent visual coverage of the Project area plus the 2-mile buffer around the Project turbines. Communication between the CIRT members regarding location of the condor, or condors, will continue until the condor either departs the 5-mile perimeter of Project turbines, or until the condor is determined to be at the 2-mile perimeter of Project turbines, at which point curtailment will be enacted.

TABLE 4.21-1
SUMMARY OF RESPONSE ACTIONS RELATED TO VHF DETECTION OF CONDORS

Approximate Condor Distance from Project Turbines	ReCON Detection	Algorithm info sent to CIRT/SCADA	Alert sent to CIRT/SCADA Ops	Automatic curtailment	CIRT mobilizes
>5 miles	Yes	No	No	No	No
2 to 5 miles	Yes	Yes – indicates the condor is between 2 and 5 miles away from Project turbines to the N, S, E, or W	Yes (yellow warning on SCADA interface, email sent to CIRT)	No, unless the condor is lost by ReCON and/or visibility is insufficient for CIRT tracking	Yes
2 miles or closer	Yes	Yes – indicates the condor is 2 miles away from Project turbines to the N, S, E, or W	Yes (red warning on SCADA interface, email sent to CIRT)	Yes	Yes

Source: BLM

Even if only a single alert is issued (i.e., the condor briefly enters the 5 mile detection perimeter but quickly departs, or the signal is lost) the CIRT shall respond by deploying to vantage points, as previously described, and continually scanning the sky. This will continue until the qualified biologist visually confirms no condor is within the 2-mile detection perimeter or until the ReCON system redetects the condor signal and the condor is beyond the 5-mile perimeter. This procedure shall occur each time a ReCON alert is received by CIRT.

d. If the ReCON system detects a condor within the 5-mile detection perimeter of Project turbines and the signal is subsequently lost and the CIRT cannot locate the bird visually, one of the following procedures shall be implemented, depending on visibility conditions:

   i. Under good visibility weather conditions (e.g., no fog or sand storm), the qualified biologist should be able to visually detect an approaching California condor within the 2-mile perimeter. Unless the biologist believes a threat exists, curtailment shall not be required as the biologist should be able to see the California condor as it moves into the 2-mile perimeter of Project turbines. The curtailment command will not be issued until the California condor is seen by the qualified biologist or the CIRT, or detected by the ReCON system and is at the 2-mile perimeter around Project turbines.

ii. Under poor visibility weather conditions (e.g., heavy fog or sand storm), visual detection of condors entering the 2-mile perimeter of Project turbines will be precluded. This scenario shall result in immediate curtailment of all Project turbines until the condor is detected outside the 2-mile perimeter.

e. The qualified biologist will direct CIRT members to discontinue response procedures if no further signals have been detected and no visual observations have been made under good visibility conditions; however, CIRT members will remain on site to respond to additional alerts as needed. The qualified biologist shall continue to continuously scan the Project site and 2-mile perimeter of Project turbines and monitor the ReCON system until 30 minutes after sunset. If a condor is subsequently detected, either by ReCON alert or by visual confirmation by the qualified biologist from the observation building, the qualified biologist shall again initiate response procedures. The CIRT shall never ignore a condor detection alert regardless of the number of times an individual California condor may trigger the detection system.

f. If, for any reason, the qualified biologist does not respond to a detection alert within 90 seconds, the SCADA operator shall curtail all Project turbines.

9. The Project owner shall provide training to the CIRT in the operation, programming, and maintenance of the ReCON system equipment and shall provide regular updates on the system's operations through monthly meetings with CIRT members.

10. The Project owner shall implement the following protocol for regular Condor Monitoring and Avoidance Plan reporting, particularly the day-to-day recording and reporting of California condor detections and responses to detections:

a. The CIRT lead shall be responsible for coordination with USFWS staff regarding reporting of data collected by the ReCON system. The points of contact for such coordination will be the Project biologist in the Ventura Fish and Wildlife Office, BLM Project manager or compliance manager, and a designated biologist at the Hopper Mountain National Wildlife Refuge.

b. Throughout the year, no less than on a weekly basis, the CIRT lead will coordinate with USFWS condor program staff via email to acquire updated VHF frequencies. The CIRT Lead shall be responsible for ensuring its Project VHF receivers are updated weekly to reflect any frequency changes. The Project owner shall be responsible for ensuring the appropriate number of VHF receivers is in place to accommodate any

additional frequencies and still retain the capability for each system to independently scan through all frequencies within 2 minutes.

c. On a daily basis, the CIRT lead shall acquire condor location (i.e., GPS) data via email from the USFWS for informational and planning purposes and for assisting in the development of any alternative detection technology.

d. The Project owner shall establish a reimbursement agreement and account with the USFWS to offset the costs associated with USFWS staff handling of Project related data and ongoing information needs.

e. The Project owner shall develop a central data collection and reporting system to organize and manage information regarding ReCON and will share these data and reports with the BLM and USFWS upon their collection or development, respectively.

f. The Project owner shall report to BLM and USFWS staff within 24 hours all condor detections (visual or ReCON alerts) during construction, operation, and maintenance that fall within the 5-mile perimeter of detection or otherwise result in Project operation going into high alert or curtailment associated with California condor detection. These reports shall include, but will not be limited to, information on the detection event (time, duration), on the condor and its behavior (e.g., patagial number, if present, location, flight height, etc.), meteorological conditions at the time the California condors were within the Project area (e.g., temperature, wind speed, and direction), and any curtailment associated with the detection event.

g. A copy of any notification response form, as described in part 3 of this measure, shall be provided to the BLM and USFWS within 48 hours of completion.

11. The Project owner shall provide the BLM and the USFWS with Annual Reporting on California condors:

    a. No later than January 31 of each of the years the Project remains in operation, the qualified biologist shall provide the BLM and USFWS with a California condor status report that shall include at a minimum:

        i. A description of the status of California condor on the Project site.

        ii. Information from the annual compliance report documenting compliance/noncompliance with each conservation measure.

        iii. An assessment of the effectiveness of each avoidance and minimization measure.

iv. A summary and map of California condor sightings and ReCON system alerts within and adjacent to the Project site.

v. Recommendations on how the minimization measures might be changed to more effectively avoid or minimize future adverse effects to the California condor.

12. The Project owner will practice response procedures for ReCON to facilitate refinement of all observers' search images. The Project owner may operate small remote aircraft (manned and/or unmanned) within 5 miles of turbines to perform drills and reduce the response time of CIRT observers.
13. The Project owner shall communicate with other wind energy facilities in the area to expand the effective range of the ReCON System.
14. The above observer and ReCON system protocols could be adapted, with approval from the BLM and USFWS, if future data collection and analyses demonstrate any newly proposed technologies and protocols would be more effective in avoiding California condor collision with Project turbines.
15. Un-guyed permanent met towers shall be constructed for the wind Project. If guy wires are necessary (e.g., on the one temporary met tower that will be removed in the year following construction), bird flight diverters shall be installed on all guy wires.
16. The Project owner shall conform to the latest practices to protect California condors from electrocution and collision with power lines. The Project owner shall construct all power lines as outlined in the most recent (at time of construction) Avian Power Line Interaction Committee guidance (currently the 2012 edition).

WIL-1j: California Condor Adaptive Management Strategy to Avoid Turbine Strikes. Due to the 30-year operational life of this Project and the anticipation that the recovery program for the California condor will continue to be successful and the risk of California condor mortality associated with the wind facility could increase. An increase in the number of California condors in the area, a change in their flight patterns that brings them more frequently into the 5-mile detection perimeter, and fewer birds equipped with VHF transmitters would challenge the functionality of the measures outlined in the Condor Monitoring and Avoidance Plan. Each of these scenarios could result in increased risk of mortality of California condors. To offset this potential increased risk, the Project owner shall develop and implement an adaptive management strategy using reasonable and feasible measures that would reduce the risk of condor injury and/or mortality. The agencies may undertake informal consultation at any time pursuant to 50 C.F.R. § 402.13. Formal consultation will follow the standards and procedures set out in 50 C.F.R. § 402.14. Several risk scenarios and measures are provided below:

1. *Change in Spatial Distribution Beyond the 8-Mile Detection Perimeter Area by California condors:* California condors regularly use gathering areas beyond the 8-mile perimeter of Project turbines. These areas are characterized by significantly different elevation, topography, and habitat than those of the Project. Continued use of these areas does not place California condors at risk of being struck by Project turbines. Continuation of this use pattern by California condors in the future shall not require additional discussion.

2. *Change in Spatial Distribution Between the 5-Mile and 8-Mile Detection Perimeter Area by California Condors:* California condors occasionally use gathering areas (including, but not limited to Double Mountain) between the 5-mile and 8-mile perimeter of Project turbines. If a major increase in use by condors of this area, as compared to present use, is observed, the Project owner, BLM, and USFWS will discuss the size and scope of this change in condor distribution and determine the appropriate action, if any, needed on the part of the Project owner to address this change.

3. *Change in Use of the 5-Mile Detection Perimeter Area by California Condors:* If increased condor use within the 5-mile detection perimeter (e.g., more than once during a 30-day period or two or more times during a 60-day period, or if an individual has been detected within the 2-mile perimeter of the Project turbines more than once during a one year period, or if a California condor roost is identified within the 5-mile detection perimeter) is detected, the USFWS, BLM, and the Project owner would initiate discussions regarding the circumstances of these detections to determine the appropriate action, as described below.

   Potential circumstances to be considered during the discussions include, but are not limited to: 1) use of the 5-mile detection perimeter area by California condors is increasing and a greater number of birds are flying within close proximity to the Project; 2) California condors are flying in the 5-mile detection perimeter area more frequently, but at an altitude that does not place them at risk for collision with turbines; 3) use by California condors shifted in proximity of the Project site, but has already shifted away again; or 4) one individual is responsible for all of the detections.

   If during discussions the USFWS and BLM determines that re-initiation of formal consultation is needed based on the parameters set out in 50 C.F.R. § 402.16, including new information on movement of California condors, the BLM would complete a Section 7(d) analysis to determine what actions could occur during re-initiation. While the BLM is completing the section 7(d) analysis, the Project owner will implement one of the following measures agreed upon by the USFWS and BLM during the reinitiation timeframe:

   a. Continue full-time observation and rely on the ReCON system and qualified biologists (status quo option) until the Section 7(d) analysis is

complete; or should the 7(d) analysis propose this measure, until the re-initiation of consultation is complete; or

b. Deploy a proven alternative detection system that is more effective in detecting condors and preventing collision with turbines (e.g., a radar detection system proven, to the satisfaction of the USFWS, to be effective at detecting California condors); or

c. Implement the failsafe approach of nighttime-only operations if it is determined that both a) and b) above are no longer effective in detecting and avoiding impacts to condors. Nighttime-only operations shall remain in place until the Project owner can implement additional protection measures to reduce the risk of injury and mortality to a level that is acceptable to the USFWS and the BLM. The USFWS and BLM will deem these measures effective if the Project owner can demonstrate that the measures would provide for the real-time curtailment of turbines within 2 minutes of the detection of a California condor within 2 miles of a Project turbine.

d. In the event that a group of California condors moves to within the 2-mile perimeter of Project turbines (e.g., feeding event or establishing new roost), all Project turbines will be curtailed to avoid impacting these condors.

4. *Change in Percentage of Population Wearing VHF Units (short term):* In the short term, the percentage of birds that are not outfitted with VHF transmitters (i.e., they are invisible to the detection system) could exceed 30 percent of the Southern California flock. Occasionally, California condors from the central California flock fly into the area occupied by the southern California flock; when this happens, the USFWS considers these birds to be part of the southern California flock. If more than 30 percent of the flock is not equipped with VHF transmitters, the Project owner shall implement one of the following measures until the USFWS reaches the 70 percent transmitter threshold again:

a. If the Project owner has already deployed a USFWS-approved alternative detection system that does not rely on California condors being equipped with VHF transmitters for detection, no further action is needed; or

b. If the Project owner has not deployed a USFWS-approved alternative detection system that does not rely on California condors being equipped with VHF transmitters for detection, but has one available, it shall be deployed within 24 hours of notice from the USFWS that the number of individuals carrying VHF transmitters has fallen below the pre-determined level; or

c. In the event that no USFWS-approved alternative detection system is available, the Project owner shall implement the failsafe approach of nighttime-only operations to avoid injury and mortality until additional protection measures to reduce the risk of mortality can be implemented.

5. *Change in Percentage of Population Wearing VHF Units (long-term):* In the long term, the potential exists that the USFWS may not be able or wish to maintain VHF transmitters on at least 70 percent of the southern California flock. The USFWS intends to transition to equipping a smaller percentage of the population with VHF transmitters over the long term. The USFWS would provide the Project owner with a 60-day written notice of the anticipated reduction in the percentage of the population equipped with VHF transmitters so the Project owner can implement one of the following alternative detection measures at the time such notice is provided:

   a. The Project owner shall deploy a USFWS-approved alternative detection system that does not rely on any California condors being equipped with VHF transmitters. This system shall be incorporated into the Project owner's "detect and curtail" strategy at the time such notice is provided; or

   b. If the Project owner has not successfully identified another means to detect and curtail, the BLM will require the Project owner to implement nighttime-only operations to reduce the potential for mortality until the Project owner has identified and implemented an alternative system to detect California condors that is approved by the BLM and USFWS.

6. *Procedure to Follow if a California Condor is Struck by a Turbine Blade:* If a California condor were struck by a turbine blade, reinitiation of formal consultation will occur according to the procedures and standards set out in 50 C.F.R. § 402.14 and the Project shall immediately be confined to nighttime-only operations until the agencies determine daytime operations may resume in whole or in part, or until formal consultation is complete.

WIL-1k1: Golden Eagle Conservation Plan. The Project Proponent shall develop and implement a Golden Eagle Conservation Plan (GECP) to address Project impacts to golden eagles. The Project Proponent shall submit the GECP to the BLM and USFWS for review and approval prior to initiation of Project construction. The GECP shall be prepared in accordance with the *Eagle Conservation Plan Guidance* (USFWS, 2013 [Module 1– Land-based Wind Energy, Appendix C]). The GECP shall include a description of the golden eagle studies completed for the Project; a risk analysis; advanced conservation practices to be implemented during operation, including a description of the adaptive management strategy for the Project and compensatory mitigation; and post-construction monitoring and reporting procedures for golden eagles.

WIL-1k2: Night Operations. If a golden eagle is injured or killed due to the construction, operation, or maintenance of this Project and the Applicant/grant holder does not possess a current eagle take permit, the Project shall move to the failsafe of night operations only to ensure that no further eagle mortalities or injuries occur. If the Applicant/grant holder applies for and receives an eagle take permit, the conditions of that permit override this measure.

WIL-1k3: Minimize Eagle Mortality. If a golden eagle is taken by the Project, and the Project proponent has not obtained an eagle take permit from USFWS prior to the taking, the BLM will require the ROW holder to implement limitations or restrictions of operations on the entire Project or specific facilities, by season or time of day as appropriate, or other adaptive management measures deemed necessary, in coordination with the USFWS, to avoid further unauthorized take of eagles.

WIL-1l: Bird and Bat Conservation Strategy. The Project Proponent shall develop a BBCS to address Project impacts to special-status avian and bat species. The Project Proponent shall submit the BBCS to the BLM and USFWS for review and approval prior to initiation of Project construction. The BBCS shall be prepared in accordance with the guidance provided by the USFWS (2013). The BBCS shall describe Project design features and advanced conservation practices to be used to minimize the risk of collision pre-construction, during construction, and during operation and maintenance. The plan shall include monitoring, adaptive management, and reporting procedures. The post-construction monitoring methods shall be based on the *California Guidelines for Reducing Impacts to Birds and Bats from Wind Energy Development* (CEC and CDFG, 2007). The draft BBCS prepared by the Project Proponent is provided in Appendix C-2, and subject to agency approval. The BBCS shall include, but not be limited to, the following minimization measures:

1. Wherever feasible, turbines will not be sited on or immediately adjacent to the upwind sides of ridge crests.
2. Turbine construction will minimize cutting into hill slopes in an attempt to achieve smooth-rounded terrain, rather than sudden berms or cuts, to reduce prey abundance.
3. Rocks unearthed during the excavation process will be used during construction of foundations or hauled offsite and disposed of properly, and not be left in piles near turbines.
4. Discourage small mammals and reptiles from burrowing under or near turbine bases by placing gravel at least five (5) feet around each tower foundation.
5. Site management shall not include rodent control programs on leased lands.

6. Only un-guyed meteorological towers will be constructed for the Project, if feasible. If guy wires are necessary, bird deterrents will be used.

WIL-1m: Wildlife Mortality Reporting Program. The Project Proponent shall submit a Wildlife Mortality Reporting Program to the BLM for review and approval prior to initiation of Project construction. This program shall be implemented during construction and operation and maintenance, and shall require the identification and reporting of any dead or injured animals (both special-status and common species) observed by personnel conducting construction and operation and maintenance activities. Reporting is necessary during construction and operation and maintenance to demonstrate compliance with the avoidance and minimization measures, to assess the effectiveness of the measures, and to make recommendations, if necessary, for future compliance. An appropriate reporting format shall be developed in coordination with the BLM.

WIL-1n: Post-Construction Avian and Bat Mortality Monitoring. Once the Project is operational, the Project proponent shall perform Post-Construction Avian and Bat Mortality Monitoring in the first, second, and third years following the initial operation of the Project to demonstrate the level of incidental injury and mortality to populations of avian or bat species in the vicinity of the Project site. Additional years of monitoring may be required by an appropriate Agency such as the United States Fish & Wildlife Service. Post-Construction Avian and Bat Mortality Monitoring shall include a Mortality Analysis, which shall be conducted as follows:

1. The Project proponent shall provide to the Kern County Planning and Community Development Department, the Bureau of Land Management, the California Department of Fish and Game, and the United States Fish and Wildlife Service the results of the mortality monitoring for avian and bat species on an annual basis. A qualified wildlife biologist shall conduct mortality monitoring using a statistically significant sample size of operational turbines within the wind energy development Project.

2. The Mortality Monitoring Analysis shall note species number, location, and distance from the turbine for each recovered bird or bat, availability of bird and bat prey species, and apparent cause of avian or bat mortality. The Project proponent shall provide all results to the Wildlife Response and Reporting System database within 90 days of completion of the annual study.

3. The Mortality Monitoring shall follow standardized guidelines outlined by the California Energy Commission and California Department of Fish and Game (CEC and CDFG, 2007) and the United States Fish and Wildlife Service (USFWS, 2010) or more current guidance from the United States Fish and Wildlife Service, and shall include carcass scavenging and searcher efficiency trials.

4. At a minimum, the Mortality Monitoring Analysis shall consider four factors:

    a. Number of annual avian and bat mortalities per turbine,

    b. Disproportionate representation of a particular species, and

    c. Comparison to existing data on wind farm mortality.

    d. Comparison to existing data on wind farm mortality from the Tehachapi Wind Resource area and the western United States.

6. In addition to Mortality Monitoring described above, starting in year 1 of Project operation and continuing for the life of the Project, annual Post-Construction Mortality Monitoring for golden eagle shall be conducted by the Project proponent, in conjunction with other monitoring, and submitted to the Kern County Planning and Community Development Department, the Bureau of Land Management, the United States Fish and Wildlife Service, and the California Department of Fish and Game.

WIL-1o: Avian Power Line Interaction Committee Standards. Prior to the issuance of a Notice to Proceed from BLM, the Project proponent shall submit written documentation to the BLM demonstrating that all power lines are engineered and constructed to the most current Avian Power Line Interaction Committee (APLIC) standards for power line design. The Project proponent shall conform to the latest practices to protect birds from electrocution and collision on the transmission line (as outlined in the 2006 and 2012 APLIC standards (APLIC, 2006; 2012).

WIL-1p: Minimize Eagle Mortality. If a golden eagle is taken by the Project, and the Project proponent has not obtained an eagle take permit from FWS prior to the taking, the BLM will require the ROW holder to implement limitations or restrictions of operations on the entire Project or specific facilities, by season or time of day as appropriate, or other adaptive management measures deemed necessary, in coordination with the FWS, to avoid further unauthorized take of eagles. These restrictions would be replaced by the terms and conditions of a BGEPA take permit, should the Applicant obtain one. BLM retains its authority to suspend, terminate, or modify the Project's ROW authorization in accordance with 43 CFR 2807.16 and 2807.17.

WIL-2a: Avoid Disturbance to Nesting Birds. Vegetation clearing shall take place outside of the general avian breeding season (February 15-September 1), when feasible. If vegetation clearing cannot occur outside the avian breeding season, the Designated Biologist/Biological Monitor shall conduct a preconstruction survey for nesting birds no more than three days prior to vegetation clearing. If no active nests are found, clearing can proceed. If active nests are found, no clearing shall be allowed within 150 feet (passerines) to 250 feet (raptors) of the active nests until the Designated Biologist determines the nest is no longer active or the nest

fails. Note that Swainson's hawk and burrowing owl nests are considered separately. If nesting golden eagles or California condors are identified, a one-mile no-activity buffer will be implemented when nests have a direct line of sight to the work area. If the work area is not within direct view of the nest, the no-disturbance buffer shall be 660 feet. Nest buffers for golden eagles, California condors, and other nesting birds may be adjusted to reflect existing conditions including ambient noise, topography, and species' disturbance tolerance with the approval of the appropriate resource agencies (CDFW and/or USFWS). The Designated Biologist/Biological Monitor shall submit the results of the pre-construction nesting bird surveys to the BLM, USFWS, and CDFW.

WIL-2b Fencing Designs that Facilitate Wildlife Movement. All fences installed on the Project site will be a maximum of four (4) feet in height, wire strand, with a smooth bottom wire at least eighteen (18) inches from the ground to facilitate wildlife movement during operation of the Project.

WIL-3a: Minimize Vehicle and Equipment Impacts during Operation and Maintenance. The Project Proponent shall implement measures to minimize the potential for desert tortoise and other wildlife species mortality along access and maintenance roads. These measures shall include:

1. A speed limit of 15 miles per hour will be maintained on all dirt access/maintenance roads, and all vehicles must remain on designated access/maintenance roads.
2. Pedestrian access outside the limits of the designated access/maintenance roads is permitted year-round as long as no ground-disturbing activities take place.
3. Vehicle traffic and parking shall be confined to designated access roads, and equipment and materials staging areas shall be clearly defined to avoid impacting habitat during the operation phase.

WIL-3b: Operation and Maintenance Education Program. Similar to the requirements for WIL-1c, a Worker Environmental Awareness Program shall be implemented during the construction and operation phase of the Project to alert workers to the hazards posed by ongoing operations to common and special-status wildlife species. The Worker Environmental Awareness Program shall include the same program elements discussed in WIL-1c.

WIL-3c: Implement the Raven Management Plan. Prior to the issuance of a Notice to Proceed by the BLM, a Raven Management Plan shall be developed for the Project site in consultation with the USFWS and CDFW. Implementation of the Raven Management Plan only applies to areas that are desert tortoise habitat. The Raven Management Plan shall require measures such as annual nest removal by a qualified biologist in consultation with the CDFW and the USFWS, removal of carrion at the base of wind turbine generators, storage of garbage in raven-proof containers, and installation of anti-nesting devices on structures where

raven nests could be built. In addition, to offset the cumulative contributions of the Project to desert tortoise from increased raven numbers, the Project proponent shall also contribute to the USFWS Regional Common Raven Management Program through the payment of fees not to exceed $105 per disturbed acre. This number shall be verified utilizing the formula established by the Desert Managers Group.

4.21.5 Residual Impacts After Mitigation

Implementation of the avoidance, minimization, and mitigation measures described in Section 4.22.4 would mitigate the direct and indirect impacts to wildlife resources in the Project area. Implementation of the required mitigation would not result in any additional impacts to wildlife resources. No residual impacts to most wildlife resources would occur with the implementation of the avoidance, minimization, and mitigation measures. However, although implementation of the measures described above would reduce the potential for special-status birds and bats to collide with WTG's during operation of the Proposed Action, these measures cannot eliminate the potential for mortality to occur. Because some level of avian and bat mortality would occur, this impact would remain significant.

The Proposed Action could impact coast horned lizard, California condor, burrowing owl, golden eagle, Swainson's hawk (and other raptors), special-status and common migratory birds, nesting birds, bats, American badger, special-status mice, and wildlife movement. The implementation of Measures WIL-1a through WIL-1o, WIL-2a, WIL-2b, WIL-3a, WIL-3b, WIL-3c, and VEG-1a, VEG-1e, VEG-2a, and VEG-2b would substantially reduce the impacts to these wildlife resources. These measures provide requirements to avoid or minimize impacts that include but are not limited to habitat restoration/revegetation and acquisition/preservation; monitoring of wildlife by specialized biologists; preconstruction surveys and relocation of certain special-status species out of harm's way; restricting activities associated with Proposed Action in time and place to minimize impacts to species; adherence to approved plans to protect golden eagles, birds, and bats; and monitoring with reporting to relevant resource agencies to ensure compliance with all of the mitigation measures.

Implementation of the mitigation that requires habitat restoration/revegetation would require some ground disturbance, but it would occur in areas that were previously disturbed during Project construction. Similar restrictions to those placed on construction, operation and maintenance, and decommissioning activities would be placed on activities associated with the restoration/revegetation and would effectively avoid or minimize most impacts to special-status species.

Without mitigation, the Proposed Action would contribute to the cumulatively substantial losses of wildlife resources within the western Mojave Desert and TWRA. The avoidance and minimization measures as well as compensatory mitigation to offset direct, indirect, and cumulative impacts to wildlife resources would assure compliance with state and federal laws, and the impacts would have no substantially adverse effects following mitigation for most

resources. However, cumulative impacts related to avian and bat collisions with WTGs would remain even after mitigation incorporation.

4.22 Irreversible and Irretrievable Commitment of Resources

The BLM NEPA Handbook (H-1790-1 Sec. 9.2.9) and NEPA Guidelines (40 CFR 1502.16) require a discussion of any irreversible or irretrievable commitments of resources which would be caused by implementation of the proposed TWP, or one of the action alternatives; the relationship between short-term uses and long-term productivity of the environment; and any growth-inducing impacts. 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 is the unavoidable destruction of natural resources that could limit the range of potential uses of that particular environment.

The Tylerhorse Wind Project (TWP) would irretrievably commit resources over the 30-year life of the project. Construction of the proposed TWP 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 TWP 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, potentially some of the resources on site could be retrieved. However, full site recovery to its pre-project state may not be possible given the 30-year life-span of the TWP and the many unknown variables that could affect the site during that time.

Construction and operation of the proposed action would disturb approximately 195 acres. Ancillary facilities will be located on the adjacent MWEP and PWEP. Temporary land disturbance related to construction of the TWP is estimated at approximately 171 acres, which is approximately 14 percent of the proposed ROW area. Permanent disturbance related to the TWP is estimated at approximately 24 acres, approximately two percent of the ROW area. About 22 acres of this total would be associated with TWP access roads.

The TWP is a renewable energy project intended to generate wind energy to reduce reliance on fossil fuels. Over the 30-year life of the TWP, this renewable energy project would provide a long-term benefit by generating electric power without the use of non-renewable resources which would result in a benefit to air quality and a reduction in carbon-based emissions.

4.23 Short-Term Uses of Environment and the Maintenance/Enhancement of Long-Term Productivity

The BLM NEPA Handbook (H-1790-1 Sec. 9.2.9) and NEPA Guidelines (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 TWP and alternatives. "Short term" refers to the total duration of project construction. "Long term" refers to an indefinite period beyond the construction of the project. The specific impacts of the TWP vary in kind, intensity, and duration. The project involves tradeoffs between long-term productivity and short-term uses of the environment.

The development of TWP and its built alternatives would result in short-term uses of the environment typically found with wind energy development. Short-term impacts associated with the construction activities are described in Chapter 4, Environmental Consequences, and include effects to the natural environment, cultural resources, and recreation resources. These can be compared to the long-term benefits of the TWP and its built alternatives that include the production of clean, 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.

As discussed earlier in Section 4.22, Irreversible and Irretrievable Commitment of Resources, the TWP and alternatives could permanently damage sensitive woodland and desert habitats, adversely affecting the long-term productivity of the area. However, the TWP would provide a long-term benefit by generating electric power without the use of non-renewable resources which would result in a benefit to air quality and a reduction in carbon-based emissions and the associated climate change impacts.

CHAPTER 5
Consultation, Coordination, and Public Involvement

5.1 Interrelationships

The BLM's authority over the TWP includes the Federal Land Policy and Management Act (FLPMA) [43 United States Code (U.S.C.) 1701 et seq.], Section 211 of the Energy Policy Act of 2005 (EPAct 05) (119 Stat. 594, 600), and BLM's Wind Energy Development Policy of December 19, 2008. The FLPMA authorizes BLM to issue ROW grants for renewable energy projects. Section 211 of EPAct 05 sets for the sense of Congress that the Secretary of the Interior should seek to have approved a minimum of 10,000 megawatts of renewable energy generating capacity on public lands by 2015.

The BLM coordinates its fire management activities with the actions of related federal and state agencies responsible for fire management. The Federal Wildland Fire Policy is a collaborative effort that includes the BLM, USFS, National Park Service (NPS), USFWS, Bureau of Indian Affairs, National Biological Service, and state wildlife management organizations. The collaborative effort has formulated and standardized the guiding principles and priorities of wildland fire management. The National Fire Plan is a collaborative interagency effort to apply the Federal Wildland Policy to all federal land management agencies and partners in state forestry or lands departments. Operational collaboration between the BLM, USFS, NPS, and USFWS is included in the Interagency Standards for Fire and Fire Aviation Operations 2003. This federally approved document addresses fire management, wildfire suppression, fuels management and prescribed fire safety, interagency coordination and cooperation, qualifications and training, objectives, performance standards, and fire management program administration.

Department of Defense

The BLM coordinates with the Department of Defense (DOD) prior to approval of ROWs for renewable energy, utility, and communication facilities to ensure that these facilities would not interfere with military training routes around Edward Air Force Base, Naval Air Weapons Station China Lake and restricted area R-2508. On January 8, 2011, the BLM received correspondence from the DoD stating that it confirmed that the project would fall within the "yellow" military review zone as defined by Section 19.08.160 and Figure 19.08.160 of the Kern County Zoning Ordinance (2012). The maximum allowable structure height in the "yellow" military review zone is 500 feet. The height of the WTGs would not exceed 500 feet, as measured from the top of the

foundation to the blade tip (with the blade in the vertical position), therefore the TWP would be consistent with Section 19.08.160 of the Kern County Zoning Ordinance and no further coordination with the DoD concerning military flight training routes is required.

U.S. Army Corps of Engineers

The U.S. Army Corps of Engineers (ACOE) has the responsibility to protect aquatic ecosystems, including water quality and wetland resources under Section 404 of the Clean Water Act. Under that authority, the ACOE regulates the discharge of dredged or fill material into waters of the U.S., including wetlands, by reviewing proposed projects to determine whether they may impact such resources and, thereby, are subject to Section 404's permit requirement. On July 10, 2006 the BLM received correspondence from the ACOE stating that the TWP site would not affect jurisdictional waters. Therefore, no further coordination with ACOE is required.

California Department of Fish and Game

CDFG protects fish and aquatic habitats within the state through regulation of modifications to streambeds under Fish and Game Code 1600 through 1616. An analysis was undertaken to determine the presence or absence (within the project area) of areas potentially requiring negotiation of a Streambed Alteration Agreement with the CDFG pursuant to Section 1600 of the State Fish and Game Code. No water features subject to CDFG jurisdiction were identified in the analysis. Therefore, it has been determined that the TWP is designed such that no potential CDFG jurisdictional drainages would be affected by the Proposed Action or alternatives.

CDFG also has the authority to regulate potential impacts to species that are protected under the CESA (Fish and Game Code 2050 et seq.). No special-status plant species protected under CESA were identified within or near the Project area. Therefore, a CDFG incidental take permit is not required for the Proposed Action or alternatives.

California Department of Transportation

Caltrans has jurisdiction over encroachments to Caltrans facilities and related easements and ROWs. Neither the Proposed Action nor alternatives would encroach on any Caltrans facilities, easements, or ROWs.

Eastern Kern Air Pollution Control District

The Project is located within the jurisdiction of the Eastern Kern Air Pollution Control District (APCD), which reviews the plans and specifications for construction in the project area. The Eastern Kern APCD would assess emissions and possible air contamination resulting from construction and operational activities (e.g., road dust, windblown contaminants, and emissions from construction activities).

5.2 Consultation Processes for ESA Section 7, NHPA Section 106, and Indian Tribes

ESA Section 7 Compliance

The USFWS has jurisdiction to protect threatened and endangered species under the Endangered Species Act (ESA) [16 U.S.C. Section 1531 et seq.]. Formal consultation with the USFWS under Section 7 of the ESA is required for any federal action that may adversely affect a federally-listed species. This consultation has been initiated on the TWP through a request by the BLM to initiate formal consultation and the submittal of a Biological Assessment (BA). Following review of the BA, the USFWS would be expected to issue a Biological Opinion (BO) that specifies mitigation measures, which must be implemented for any protected species. Compliance with those measures would be required to implement the TWP.

NHPA Section 106 Compliance and Tribal Consultation

NHPA Section 106 Compliance

Federal agencies must demonstrate compliance with the National Historic Preservation Act (NHPA) (16 U.S.C. 470, et seq.). Section 106 of the NHPA requires a federal agency with jurisdiction over a project to evaluate the effect of the proposed project on properties included on, or eligible for, the National Register of Historic Places (NRHP). Federal agencies must also provide the Advisory Council on Historic Preservation (ACHP) an opportunity to comment on the effects of the proposed project to those properties.

A literature review, record search, built environment survey and archaeological field inventory has been completed to identify historic properties within the TWP APE. A Native American Heritage Commission (NAHC) Sacred Lands File search was also completed, which included a list of tribal individuals with whom the NAHC recommends that the applicant consult regarding the project and potential effects to sacred sites. The BLM initiated Section 106 consultation with Indian Tribes to ensure that resources and places of traditional cultural or religious concern are taken into account (see Section 5.10, below).

Consultation letters were sent out by BLM to SHPO and ACHP on April 26, 2013 requesting comments on the delineation of the APE, appropriateness of the historic property identification efforts, and eligibility determinations. The BLM also requested the appropriateness of the historic concurrence of no affect. As of November 2013, neither agency has provided a response.

Tribal Consultation

The BLM consults with Federally recognized Indian Tribes on a government-to-government basis in accordance with several authorities including NEPA, the NHPA, the American Indian

Religious Freedom Act, and Executive Order 13007. Under Section 106 of the NHPA, the BLM consults with Federally recognized Indian Tribes as part of its responsibilities to identify, evaluate, and resolve adverse effects on historic properties important to these Tribal communities that may be affected by the BLM undertakings.

The TWP is located within the traditional Kawaiisu and Tubatulabals Tribal homelands. Earlier contacts and correspondence efforts were made by the BLM regarding the project's ROW and meteorological testing with four Federally unrecognized tribal communities of eastern Kern County beginning in June 2009 - the Kern Valley Indian Council, the Tubatulabals of the Kern Valley, the Nuui Cunni Interpretative Center operated by the Kern River Paiute Tribe, and the Monache Inter-Tribal Council. These organizations are the acknowledged leaders of the Kawaiisu and Tubatulabals Tribal communities of eastern Kern County. The communities were invited to apprise the BLM of any comments or concerns regarding this proposal, which was referred to at that time as the PdV/Manzana Project. A suggested date for the submission of any comments was offered for early August 2009, but nothing was received by the BLM.

During January 2011 a second letter was sent to these Tribal organizations informing them that enXco Development Corporation (the original applicant for the TWP) had submitted a Type III application to BLM requesting authorization to erect up to 34 wind turbines within the current APE. An invitation was extended in the letter to these Tribal groups to please alert the BLM as to whether any cultural resources or Traditional Cultural Properties important to them would be affected by the undertaking. A suggested date for the submission of any comments to the BLM was offered for mid-March 2011, but nothing was received at that time by the BLM.

A third set of invitation letters was provided to these Tribal organizations in May 2013. The purpose of the letters was to alert the Tribal communities to the specific details of the proposed TWP as proposed by Heartland, and again, ask if any cultural resources or Traditional Cultural Properties important to them would be affected by the proposed undertaking. A suggested date for the submission of any comments to the BLM was offered for early June 2013. However, no comments were received. Telephone contacts were made during the week of July 9 through 12, 2013, to five tribes regarding the BLMs consultation request in May 2013.

The BLM sent letters to the tribal organizations, as part of its government-to-government responsibilities, to five Tribes located outside of the traditional Kawaiisu and Tubatulabals Tribal homelands in May of 2013. The five Tribes include: Bishop Paiute Tribe, the Big Pine Paiute Tribe, the Ft. Independence Paiute Tribe, the Lone Pine Paiute-Shoshone Tribe, and the Timbisha Shoshone Tribe. These Tribes were apprised of the project's details and were invited to provide BLM with any comments and/or concerns regarding whether any cultural resources or Traditional Cultural Properties important to them would be affected by the proposed undertaking. Additional letters providing the BLM’s eligibility determinations, findings of effect, tribal consultation efforts, agency findings, and requesting consultation from the SHPO and the ACHP.

In addition to these communications, the BLM has also responded to requests for both formal and informal meetings with Tribal governments, tribal staff, and tribal members and has followed up with Tribal governments through additional correspondence, communication, and provision of other project information.

As of July 2013, based on BLM follow-up phone calls with the five tribes listed above, the BLM received one formal response letter from Bishop Pauite Tribe raising two issues in regard to biological and cultural resources. The cultural issue in the letter stated, "all ground disturbing activities a Tribal Cultural Monitor be hired for monitoring purposes. And during construction artifacts should be protected from vandals as well as construction crew." Furthermore, the Bishop Pauite Tribe raised a concern that the Cultural Resources Technical Report did not address the Migratory Bird Treaty Act. The Bishop Pauite formal response letter is dated July 11, 2013, signed by Raymond Andrews, Tribal Historical Preservation Officer (THPO).

The BLM is committed to continuing consultation and collaboration efforts with these Tribes and tribal communities regarding the Project.

5.3 Implementation, Monitoring and Enforcement

Implementation

The Lead Agencies will continue to involve and collaborate with the public during the implementation of the TWP if it is approved. Opportunities to become involved during implementation and monitoring could include development of partnerships and community-based citizen working groups. Citizens and user groups within the vicinity of the Project are invited to become actively involved in implementation, monitoring, and enforcement of decisions. The Lead Agencies and citizens could collaboratively develop site-specific goals and objectives that mutually benefit public land resources, local communities, and the people who live, work, or play on the public lands.

Monitoring

The BLM would monitor activities throughout the life of the TWP to ensure that decisions are implemented in accordance with the approved ROD and ROW grant. Monitoring would be conducted to determine whether decisions, BMPs, and approved mitigation measures are achieving the desired effects. Effectiveness monitoring would provide an empirical data base on impacts of decisions and effectiveness of mitigation. Effectiveness monitoring also would be useful for improving analytical procedures for future impact analyses and for designing or improving mitigation and enhancement measures.

Enforcement and Adaptive Management

The BLM would incorporate adaptive management into mitigation for the TWP. Adaptive management is a system of management practices based on clearly identified outcomes, monitoring to determine if management actions are meeting outcomes, and, if not, facilitating management changes that will best ensure that outcomes are met or to re-evaluate the outcomes. This system is in effect developing an adaptive process as an implementation tool that goes beyond the traditional "predict-mitigate-implement" model and incorporates the "predict-mitigate-implement-monitor-adapt" adaptive management model. Put another way, adaptive management is a system of management practices based on clearly identified outcomes, monitoring to determine if management actions are meeting outcomes, and, if not, facilitating management changes that will best ensure that outcomes are met or to re-evaluate the outcomes. Adaptive management has been incorporated into the mitigation measures adopted for the Proposed Action. Procedures include:

- Determining environmental effects of a project and identifying mitigation needs along with other permitting and regulatory requirements. Analysis should indicate where data are lacking and uncertainty exists with respect to the intended outcomes and the significance of this lack (see 40 CFR §1502.22);
- Monitoring designed for adaptive management must be able to result in appropriate adjustments in project activities as the project is constructed and planned mitigation is installed;
- Striving to ensure public input into and understanding of the principles of adaptive management;
- Maintaining open channels of information to the public and affected regulatory and permitting agencies during the application of adaptive management, including transparency of the monitoring process that precedes adaptive management and the decision-making process that implements it. This involves: (a) identifying indicators of change, (b) assessing monitoring activities for accuracy and usefulness, and (c) making changes in tactics, activities and/or strategies; and
- Providing post-activity opportunity for public and affected outside agency review of adaptive management practices, including practices that were exceptions to any resource management plans or that had permitting and other regulatory requirements not satisfied by prior coordination.

Adaptive management allows agencies, in their environmental reviews, to establish and analyze mitigation measures that are projected to result in the desired environmental outcomes, and identify those mitigation principles or measures that it would apply in the event the initial mitigation commitments are not implemented or effective.

5.4 Public Involvement

Introduction

Public participation is a dynamic process that continues throughout the preparation of an EIS. Scoping for the TWP was initiated with the publication of the Notice of Intent (NOI) in the Federal Register on July 15, 2011. The BLM held one scoping meeting after the publication of the NOI to formally solicit public and agency input on issues to be addressed in the EIS. In addition, the BLM has coordinated with affected local, state, and federal agencies on issues of concern, as described in Sections 5.1 and 5.2 above. Public and agency comments are also being sought on the information, analysis, and conclusions presented in this DEIS/PA. The BLM will use and coordinate the NEPA commenting process to satisfy the public involvement process for Section 106 of the NHPA as provided for in 36 CFR 800.2(d)(3).The results of the scoping process are summarized below.

Scoping Requirements

Scoping is required by NEPA pursuant to 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.

Scoping Process

The scoping process for the TWP EIS included the following:

- Publishing the Notice of Intent (NOI) to prepare an EIS.
- Conducting a public scoping meeting and agency consultation meetings.
- Documenting all public and agency comments received for the proposed project in a Public Scoping Report.

Each of these components are discussed below.

Notice of Intent

In compliance with NEPA (40 CFR 1501.7), the BLM published a NOI in the Federal Register to prepare an EIS for the Tylerhorse Wind Energy Project (FR Vol. 76, No. 136, page 41815, July 15, 2011). The NOI serves as the official legal notice that a federal agency is commencing preparation of an EIS. The Federal Register serves as the U.S. Government's official noticing and reporting publication. The NOI initiates the public scoping period for the EIS, provides information about the proposed project, and serves as an invitation for other federal agencies to submit comments. The end date of the public scoping period was extended from its initial date to September 29, 2011. The BLM also established a website with project information describing the various methods for providing public comment on the project, including an e-mail address where

comments could be sent electronically. In addition, BLM issued a press release on the project's website regarding the NOI on July 15, 2011.

Public Scoping Meeting

During the scoping period, the BLM held one public scoping meeting on September 14, 2011, in the Mojave Veterans Building (Room 1, 15580 O Street, Mojave CA, 93501). A press release was issued on the Project's website on August 31, 2011 to notify the public of the scoping meeting. The meeting provided the public and government agencies the opportunity to receive information on the NEPA process and on the proposed project and to provide verbal and written comments. Presentations describing the environmental review process and the Project's details were delivered by representatives of the BLM and enXco Development Corporation (the original applicant for the TWP).

Scoping Report

The comment period for the NOI ended on September 29, 2011. In total, three letters were received, one from the U.S. Environmental Protection Agency (EPA), one from Defenders of Wildlife, and one from the National Park Service. Issue areas addressed in the public comments included: noise; visual resources; hazardous materials, hazardous waste and solid waste; project decommissioning, site restoration and financial assurance; tribal governments; environmental justice and impacted communities; land use; biological resources; water resources; air resources; climate change; indirect and cumulative impacts; and project alternatives. These comments were incorporated into the EIS project record and are documented and summarized in this public scoping report.

The BLM produced a scoping report in October 2011, which contained information received during the public scoping comment period. Comments received during the scoping period were grouped into the following five categories:

- Statement of Purpose and Need;
- Human Environment Issues;
- Natural Environment Issues;
- Indirect and Cumulative Impacts; and
- Project Alternatives

The Scoping Report can be obtained online at:

http://www.blm.gov/ca/st/en/fo/ridgecrest/tylerhorse_wind_project.html

Public Comment Process

This Draft EIS/PA will be circulated for a 90-day public comment period. All comments must be postmarked no later than 90 days from the date the Notice of Availability for this Draft EIS/PA is published in the Federal Register by the USEPA.

Written comments may be submitted in any of the following ways:

U.S. Post Bureau of Land Management,
Attn: Tylerhorse Wind Project
22835 Calle San Juan de Los Lagos
Moreno Valley, CA 92553

E-mail: cperry@blm.gov

One or more public meetings, to be noticed separately, will be held during the 90-day public comment period. Please see BLM's web page for information about the location, date, and time of any such meeting, at:

http://www.blm.gov/ca/st/en/fo/ridgecrest/tylerhorse_wind_project.html

The BLM Desert District Office may also be reached for questions and information by phone at (951) 697-5388. All substantive issues raised during the comment period will be considered, and written comments addressed as appropriate in the Final EIS/Proposed PA.

Additional hard copies or CD-ROM versions of the Draft EIS/PA may be obtained by contacting the Ridgecrest Field Office. The document also will be available on the Internet at:

http://www.blm.gov/ca/st/en/fo/ridgecrest/tylerhorse_wind_project.html

5.5 List of Preparers

Though individuals have primary responsibility for preparing sections of the Draft EIS/PA, 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 5-1
LIST OF PREPARERS

Name	Job Title	Primary Responsibility
BLM Ridgecrest Field Office		
Storm, Donald J	Archeologist	Cultural Resources
Rodriquez, Paul	Realty Specialist	Realty
Fitton, Sam	Range Specialist	Grazing Allotments
Beck, Craig	Recreation Branch Chief	Recreation, Pacific Crest Trail
Symons, Carl B.	Office Manager	BLM Manager
BLM – Palm Spring-South Coast Field Office		
Cook, Stewart	GIS Specialist	Mapping
Hill, Greg	NEPA Coordinator	OHV/Recreation/VRM

Name	Job Title	Primary Responsibility
BLM – California Desert District Office		
Perry, Cedric	Project Manger	Project Management
Elser, Lynette	Planning and Environmental Coordinator	Land Use Planning and NEPA Compliance
Ludwig, Noel	Hydrologist	Water Resources
Marsden, Kim	Wildlife Biologist	Wildlife and Vegetation
Tiffany Thomas	Archaeologist	Cultural Resources
BLM – California State Office		
Brink, Dianna	Rangeland Management Specialist	Rangeland, Grazing, Invasive Species, Weeds
Conrad-Saydah, Ashley	Renewable Energy Program Manager	Climate Change, Environmental Justice, (transmission)
Keeler, Jim	Off-highway vehicle coordinator	Recreation
Lund, Christina	State Botanist	Botany
McGinnis, Sandra	Planning and Environmental Coordinator	Planning, NEPA Compliance
Wick, Bob	Natural Resource Specialist - Wilderness	Wilderness Characteristics Inventory/VRM
Environmental Science Associates		
Ainsworth, Greg	Director, Senior Managing Biologist, M.C.R.P., Environmental Planning	Wildland Fire Ecology
Morales, Matt	Associate II, B.A., Environmental Studies	Air Resources, Global Climate Change and Noise
Gispert, Cristina	Senior Associate, B.S., Environmental Management and Protection	Purpose, Need and Special Designations
Carlson, Allisa	Associate, III, B.A., Environmental Studies/Geography	Visual Resources
Costa, Peter	Transportation Specialist; M.S., Urban Planning and Public Policy	Transportation and Public Access
Dong, Allyson	Associate III, M.U.R.P., Urban and Regional Planning	Multiple Use Classes
Eckard, Robert	Associate; Ph.D., Water Quality	Water Resources
Gispert, Cristina	Senior Associate, B.S., Environmental Management and Protection	Recreation
Henry, Joseph	Biologist, M.P.H.	Livestock and Grazing
Jaeckel, David	B.A. Geography / Environmental Studies and Urban and Regional Studies	Paleontological Resources
Kershaw, Carol	Lands and Realty Specialist (Red Rock Consulting, LLC)	Lands and Reality
Koenig, Heidi	Archeologist, M.A., Cultural Resources	Cultural Resources
Malone, Rebecca	Senior Associate, M.A., Economics	Environmental Justice and Social Economics
Martinez, Dana	Associate II, M.S., City Planning	Irreversible and Irretrievable Commitment, Short-term and Long-term Productivity and Consultation, Coordination and Public Involvement
Gispert, Cristina	Senior Associate, B.S., Environmental Management and Protection	Abstract, Executive Summary, Proposed Action, Environmental Consequences, Mineral Resources and Wild Horse and Burros
Schniewind, Eric	Geologist, B.A., Geological Sciences	Public Health and Safety and Soil Resources
Pittman, Brian	Associate Biologist, B.A., Environmental Studies	Vegetation Resources and Wildlife Resources

ACRONYMS AND ABBREVIATIONS

$\mu g/m^3$	micrograms per cubic meter
°F	degrees Fahrenheit
A	ampere (amp)
AADT	Annual Average Daily Traffic
AAQS	ambient air quality standards
AB	Assembly Bill
AB 32	California Global Warming Solutions Act of 2006
ac	acres
ACC	air-cooled condenser
ACEC	Area of Critical Environmental Concern
ACHP	Advisory Council on Historic Preservation
ACI	American Concrete Institute
ACOE	U.S. Army Corps of Engineers
ADT	Average Daily Traffic
AERMOD	AMS/EPA Regulatory Model
af or ac-ft	acre-feet
AFB	Air Force Base
AFC	Application for Certification
afy or ac-ft/yr	acre-feet per year
AGL	above ground level
AIChE	American Institute of Chemical Engineers
AIM	Aeronautical Information Manual
AIRFA	American Indian Religious Freedom Act
AISC	American Institute of Steel Construction
ALUCP	Airport Land Use Compatibility Plan
AM	Amplitude Modulated
AML	appropriate management level
AML	abandoned mined lands
AMPs	Allotment Management Plans
AMS	American Meteorological Society
amsl	above mean sea level
AMT	alternative minimum tax

ANSI	American National Standards Institute
APCDs	Air Pollution Control Districts
APE	Area of Potential Effects
APLIC	Avian Power Line Interaction Committee
ARPA	Archaeological Resources Protection Act of 1979
ASCE	American Society of Civil Engineers
AVAQMD	Antelope Valley Air Quality Management District
BA	Biological Assessment
BBCS	Bird and Bat Conservation Strategy
BGEPA	Bald and Golden Eagle Protection Act
bgs	below ground surface
BLM	United States Bureau of Land Management
BMPs	best management practices
BO	Biological Opinion
BRTR	Biological Resources Technical Report
CA	California
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CAL FIRE	California Department of Forestry and Fire Protection
CalARP	California Accidental Release Program
Cal-IPC	California Invasive Plant Council
Caltrans	California State Department of Transportation
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resource Board
CBC	California Building Code
CCAR	California Climate Action Registry
CCR	California Code of Regulations
CDC	Center for Disease Control and Prevention
CDCA	California Desert Conservation Area
CDCA Plan	California Desert Conservation Area Plan
CDFA	California Department of Food and Agriculture
CDFG	California Department of Fish and Game
CDFW	California Department of Fish and Wildlife
CDNPA	California Desert Native Plants Act
CDPs	Cities/Census designated places
CDPH	California Department of Public Health
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
CHP	California Highway Patrol
CHU	Critical Habitat Unit
cm	centimeters
CMLUCA	California Military Land Use Compatibility Analysis
CMS	Condor Monitoring System
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide
COG	Council of Governments
County	Kern County
CPUC	California Public Utilities Commission
CRHR	California Register of Historical Resources
CUPA	Certified Unified Program Authority
CWA	Clean Water Act
CWEP	Catalina Wind Energy Project
dB	Decibel
dBA	A-weighted decibels
DHS	Department of Health Services
DOC	California Department of Conservation
DOD	United States Department of Defense
DOI	United States Department of Interior
DOSH	Division of Occupational Safety and Health
DOT	Department of Transportation
DPM	diesel particulate matter
DTSC	Department of Toxic Substances Control
DWR	California Department of Water Resources
EDD	California Economic Development Department
EHS	extremely hazardous substances
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EKAPCD	Eastern Kern Air Pollution Control District
EMF	Electromagnetic Field
EO	Executive Order
EPA	United States Environmental Protection Agency

EPAct 05	Energy Policy Act of 2005
EPCRA	Emergency Planning and Community Right to Know Act
ESA	Endangered Species Act
F	Fahrenheit
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulations
FCAA	Federal Clean Air Act
FCAAA	Federal Clean Air Act Amendments
FEIR	Final Environmental Impact Report
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FESA	Federal Endangered Species Act
FGC	Fish and Game Code
FHSZ	Fire Hazard Severity Zones
FIP	Federal Implementation Plan
FIRMs	Flood Insurance Rate Maps
FLPMA	Federal Land Policy and Management Act
FM	Frequency Modulated
FMAP	Fire Management Activity Plan
FMMP	Farmland Mapping and Monitoring Program
FTA	Federal Transit Administration
FWCA	Fish and Wildlife Coordination Act
FY	Fiscal Year
GECP	Golden Eagle Conservation Plan
GHG	greenhouse gas
GIS	geographic information system
GO	General Orders
GPS	Global Positioning System
GWP	Global Warning Potential
H_2S	hydrogen sulfide
HA	Herd Areas
HAP	Hazardous Air Pollutant
HCM	Highway Capacity Manual
HCP	Habitat Conservation Plans
HFCs	hydrofluorocarbons
His	Historical Indices
HMAs	Herd Management Areas
HMBP	Hazardous Materials Business Plan
HPS	Hantavirus Pulmonary Syndrome

HSWA	Hazardous and Solid Waste Act
Hz	Hertz
I	Interstate
IBC	International Building Code
ICC	International Code Council
IEEE	Institute of Electrical and Electronics Engineers
IM	Instruction Memo
IPCC	Intergovernmental Panel on Climate Change
ISO	International Organization for Standardization
KCGP	Kern County General Plan
KCPR	Kern County Parks and Recreation
KCSO	Kern County Sheriffs Office
KOPs	key observation points
kV	kilovolt
L_{dn}	day-night average noise level
L_{eq}	equivalent continuous sound level
LEPC	Local emergency planning committee
LOS	level of service
LR2000	Legacy Rehost 2000
LRWQCB	Lahontan Regional Water Quality Control Board
LSAA	Lake or Streambed Alteration Agreement
LTVA	Long-Term Visitor Area
L_v	Velocity levels
LVW	loaded vehicle weight
MBTA	Migratory Bird Treaty Act
MCL	Maximum Contaminant Level
MDAB	Mojave Desert Air Basin
MDAQMD	Mojave Desert Air Quality Management District
MOA	Memo of Agreement
MOU	Memorandum of Understanding
mph	miles per hour
MRDS	Mineral Resources Data System
MPO	Metropolitan Planning Organizations
MSA	Metropolitan Statistical Area
MSDS	Material Safety Data Sheets
msl	mean sea level
MTPs	Master Title Plats
MUC	Multiple-Use Class
MUC C	Multiple-Use Class Controlled
MUC I	Multiple-Use Class Intensive

MUC L	Multiple-Use Class Limited
MUC M	Multiple-Use Class Moderate
MUC U	Multiple-Use Class Unclassified
MW	megawatts
MWEP	Manzana Wind Energy Project
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NCCP	Natural Community Conservation Plans
NEPA	National Environmental Policy Act
NERC	North American Electric Reliability Corporation
NESC	National Electrical Safety Code
NESHAP	National Emission Standards for Hazardous Air Pollutants
NFIP	National Flood Insurance Program
NHPA	National Historic Preservation Act
NLCS	National Landscape Conservation System
NRC	National Research Council
NRHP or National Register	National Register of Historic Places
NO	nitric oxide
NO_2	nitrogen dioxide
NO_3	nitrates
NOI	Notice of Intent
NO_X	nitrogen oxides
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NPPA	Native Plant Protection Act
NPS	United States National Park Service
NWP	Nationwide Permits
O&M	operations and maintenance
O_3	ozone
OES	Office of Emergency Services
OHV	off-highway vehicle
OMB	Office Management and Budget
OPLA	Omnibus Public Lands Act
OPR	Office of Planning and Research
ORV	off-road vehicle
OS	Open Space
OSHA	United States Occupational Safety and Health Administration
PA	Programmatic Agreement
PA/FEIS	Resource Management Plan-Amendment/Final Environmental Impact Statement

PCT	Pacific Crest Trail
PEIS	Programmatic Environmental Impact Statement
PFCs	perfluorocarbons
PFYC	Potential Fossil Yield Classification
pH	Part Hydrogen
PM	particulate matter
PM_{10}	particulate matter less than 10 microns in diameter
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
POD	Plan of Development
POU	publicly owned utilities
PPV	peak particle velocity
PRC	Public Resources Code
PRIA	Public Rangelands Improvement Act of 1978
PSD	Prevention of Significant Deterioration
PWEP	Pacific Wind Energy Project
PWIP	Pacific Wind Infill Project
PWL	sound power level
RAS	Rangeland Administration System
RCRA	Resource Conservation and Recovery Act
RMP	Resource Management Plan
RMP	Risk Management Plan
rms	root mean square
ROD	Record of Decision
ROG	reactive organic gases
ROW	right-of-way
rpm	revolutions per minute
RQ	reportable quantity
RTP	Regional Transportation Plan
RWQCB	Regional Water Quality Control Board
SARA	Superfund Amendments and Reauthorization Act of 1986
SB	Senate Bill
SCADA	supervisory control and data acquisition
SCAQMD	South Coast Air Quality Management District
SCE	Southern California Edison
SCS	Sustainable Communities Strategy
SDC	Seismic Design Category
SDLAC	Sanitation Districts of Los Angeles County
SERC	State Emergency Response Commission
SF_6	sulfur hexafluoride
SHPO	State Historic Preservation Officer

SiO_2	Silica
SIP	State Implementation Plan
SLE	St. Louis Encephalitis
SLRU	Sensitivity Level Rating Units
SMA	Special Management Area
SMARA	State Surface Mining and Reclamation Act
SMGB	State Mining and Geologic Board
SO_2	sulfur dioxide
SO_4	sulfate
SO_X	sulfur oxides
SPCC	Spill Prevention Control and Countermeasures
SQRUs	Scenic Quality Rating Units
SSJVIC	South San Joaquin Valley Information Center
SWRCB	State Water Resources Control Board
TAC	Toxic Air Contaminants
THPO	Tribal Historic Preservation Officer
TPQ	Threshold Planning Quantities
TQ	Threshold Quantity
TRB	Transportation Research Board
TRTP	Tehachapi Renewable Transmission Project
TVRPD	Tehachapi Valley Recreation and Parks Department
TWP	Tylerhorse Wind Project
TWRA	Tehachapi Wind Resource Area
USACE	United States Army Corps of Engineers
USC	United States Code
USDA	United States Department of Agriculture
USDI	United States Department of the Interior
USEPA	United States Environmental Protection Agency
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UST	Underground Storage Tank
UXO	unexploded ordnance
V	volts
v/c	volume-to-capacity
VdB	velocity decibel
VMT	vehicle miles traveled
VOCs	volatile organic compounds
VRI	Visual Resource Inventory
VRM	Visual Resource Management

WAs	Wilderness Areas
WE	wind energy
WEE	Western Engine Encephalomyelitis
WEMO	West Mojave Plan
WFMP	Wildland Fireland Management Plan
WHO	World Health Organization
WNV	West Nile Virus
WSA	Wilderness Study Area
WTG	wind turbine generators
WTGAC	Wind Turbine Generators Advisory Committee
WUS	Waters of the United States

GLOSSARY OF TERMS

A

Adjacent: Defined by ASTM E1527-00 as any real property the border of which is contiguous or partially contiguous with that of the Site or would be contiguous or partially contiguous with that of the Site but for a street, road, or other public thoroughfare separating them.

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.

Alluvium: a fine-grained fertile soil consisting of mud, silt, and sand deposited by flowing water on flood plains, in river beds, and in estuaries.

Alluvial Fan: Fan shaped material of water deposited material.

Ambient Air Quality Standards (AAQS): 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.

Archaeological district: A significant concentration, linkage, or continuity of sites, buildings, or features important in history or prehistory. There can be discontiguous districts composed of resources that are not in close proximity to one another.

Area of Critical Environmental Concern (ACEC): A designated area on public lands where special management attention is required: (1) to protect and prevent irreparable damage to fish and wildlife; (2) to protect important historic, cultural, or scenic values, or other natural systems or processes; or (3) 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.

B

Basic Elements: The four design elements (form, line, color, and texture), which determine how the character of a landscape is perceived.

Bioremediation: The use of biological agents, such as bacteria or plants, to remove or neutralize contaminants, as in polluted soil or water.

C

Calcareous Substrates: Substances, often cemented and of a chalky appearance, containing calcium carbonate.

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.

Characteristic: A distinguishing trait, feature, or quality.

Characteristic Landscape: The established landscape within an area being viewed. This does not necessarily mean a naturalistic character. It could refer to an agricultural setting, an urban landscape, a primarily natural environment, or a combination of these types.

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.

Contrast: Opposition or unlikeness of different forms, lines, colors, or textures in a landscape.

Contrast Rating: A method of analyzing the potential visual impacts of proposed management activities.

Corrosive Soils: Potential soil-induced electrochemical or chemical action that could corrode or deteriorate concrete, reinforcing steel in concrete structures, and bare-metal structures.

Cretaceous: In geologic history the third and final period of the Mesozoic era, from 144 million to 65 million years ago, during which extensive marine chalk beds formed.

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 US 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.

Cryptocrystalline silicate: Cryptocrystalline silicates are rocks such as flint, chert, chalcedony, or jasper that contain a high percentage of silica (SiO_2), the primary compound that composes quartz.

Cultural Landscape: A geographic area, including both natural and cultural resources, associated with a historic event, activity, group, or person; or, a geographic area that has been assigned cultural or social meaning by associated cultural groups.

Cultural Modification: Any man-caused change in the land form, water form, vegetation, or the addition of a structure which creates a visual contrast in the basic elements (form, line, color, texture) of the naturalistic character of a landscape.

Cultural Resource: A location of human activity, occupation, or use identifiable through field inventory, historical documentation, or oral evidence. Cultural resources include archaeological and historical sites, structures, buildings, objects, artifacts, works of art, architecture, and natural features that were important in past human events. They may consist of physical remains or areas where significant human events occurred, even though evidence of the events no longer remains. And they may include definite locations of traditional, cultural, or religious importance to specified social or cultural groups.

Cultural Resource Data: Cultural resource information embodied in material remains such as artifacts, features, organic materials, and other remnants of past activities. An important aspect of data is context, a concept that refers to the relationships among these types of materials and the situations in which they are found.

Cultural Resource Data Recovery: The professional application of scientific techniques of controlled observation, collection, excavation, and/or removal of physical remains, including analysis, interpretation, explanation, and preservation of recovered remains and associated records in an appropriate curatorial facility used as a means of protection. Data recovery may sometimes employ professional collection of such data as oral histories, genealogies, folklore, and related information to portray the social significance of the affected resources. Such data recovery is sometimes used as a measure to mitigate the adverse impacts of a ground-disturbing project or activity.

Cultural Resource Integrity: The condition of a cultural property, its capacity to yield scientific data, and its ability to convey its historical significance. Integrity may reflect the authenticity of a

property's historic identity, evidenced by the survival or physical characteristics that existed during its historic or prehistoric period, or its expression of the aesthetic or historic sense of a particular period of time.

Cultural Resource Inventory (Survey): A descriptive listing and documentation, including photographs and maps of cultural resources. Included in an inventory are the processes of locating, identifying, and recording sites, structures, buildings, objects, and districts through library and archival research, information from persons knowledgeable about cultural resources, and on-the-ground surveys of varying intensity.

> ***Class I:*** A professionally prepared study that compiles, analyzes, and synthesizes all available data on an area's cultural resources. Information sources for this study include published and unpublished documents, BLM inventory records, institutional site files, and state and National Register files. Class I inventories may have prehistoric, historic, and ethnological and sociological elements. These inventories are periodically updated to include new data from other studies and Class II and III inventories.
>
> ***Class II:*** A professionally conducted, statistically based sample survey designed to describe the probable density, diversity, and distribution of cultural properties in a large area. This survey is achieved by projecting the results of an intensive survey carried out over limited parts of the target area. Within individual sample units, survey aims, methods, and intensities are the same as those applied in Class III inventories. To improve statistical reliability, Class II inventories may be conducted in several phases with different sample designs.
>
> ***Class III:*** A professionally conducted intensive survey of an entire target area aimed at locating and recording all visible cultural properties. In a Class III survey, trained observers commonly conduct systematic inspections by walking a series of close interval parallel transects until they have thoroughly examined an area.

Cultural Resource Values: The irreplaceable qualities that are embodied in cultural resources, such as scientific information about prehistory and history, cultural significance to Native Americans and other groups, and the potential to enhance public education and enjoyment of the Nation's rich cultural heritage.

Cultural Site: A physical location of past human activities or events, more commonly referred to as an archaeological site or a historic property. Such sites vary greatly in size and range from the location of a single cultural resource object to a cluster of cultural resource structures with associated objects and features.

Cumulative Impacts: Two or more individual impacts that, when considered together, are considerable or that compound or increase other environmental impacts. The following statements also apply when considering cumulative impacts: (1) the individual impacts may be change resulting from a single project or separate projects; (2) the cumulative impacts from several projects is the change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over time.

D

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.

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.

Distance Zones: A subdivision of the landscape as viewed from an observer position. The subdivision (zones) includes foreground-middleground, background, and seldom seen.

Drought Condition: A hydrologic condition during a defined period when rainfall and runoff are much less than average.

E

Enhancement: A management action designed to improve visual quality.

Environment: The physical conditions that exist in the area and that would be affected by a proposed project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historical or aesthetic significance. The area involved is where significant direct or indirect impacts would occur as a result of the project. The environment includes both natural and artificial conditions.

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.

Excavation: The scientific examination of an archaeological site through layer-by-layer removal and study of the contents within prescribed surface units, e.g. square meters.

Expansive Soils: A soil which significantly changes its volume in horizontal and vertical planes with changes in moisture content.

F

Fluvial: Of, relating to, or occurring in a river.

Form: The mass or shape of an object or objects which appear unified, such as a vegetative opening in a forest, a cliff formation, or a water tank.

G

Geomorphic Province: Naturally defined geologic regions that display a distinct landscape or landform.

Greenhouse Gas (GHG): A gaseous compound that absorbs infrared radiation and re-radiates a portion of hat back toward the earth's surface, thus trapping heat and warming the earth's atmosphere.

Groundwater Overdraft: The condition of groundwater basin in which the amount of water withdrawn by pumping exceeds the amount of water that recharges the basin over a period of years during which water supply conditions approximate average conditions.

H

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 which 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.

Historical Site: A location that was used or occupied after the arrival of Europeans in North America (ca. A.D. 1492). Such sites may consist of physical remains at archaeological sites or areas where significant human events occurred, even though evidence of the events no longer remains. They may have been used by people of either European or Native American descent.

Historical Resource: A cultural resource, for the purpose of Section 106, included in, or eligible for inclusion in the National Register of Historic Places (36 CFR 800.16(1)(1). Subsumed in present analysis under "important historic or cultural aspects of our national heritage."

Hydrocarbons: Any organic compound containing only carbon and hydrogen, such as the alkanes, alkenes, alkynes, terpenes, and arenes.

I

Igneous: Rock, such as granite and basalt that has solidified from a molten or partially molten state.

Indian Tribe: Any American Indian group in the United States that the Secretary of the Interior recognizes as possessing tribal status (listed periodically in the Federal Register).

Indigenous: Being of native origin (such as indigenous peoples or indigenous cultural features).

Interdisciplinary Team: A group of individuals with different training, representing the physical sciences, social sciences, and environmental design arts, assembled to solve a problem or perform a task. The members of the team proceed to a solution with frequent interaction so that each discipline may provide insights to any stage of the problem and disciplines may combine to provide new solutions.

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.

K

Key Observation Point (KOP): One or a series of points on a travel route or at a use area or a potential use area, where the view of a management activity would be most revealing.

L

Landscape Character: The arrangement of a particular landscape as formed by the variety and intensity of the landscape features and the four basic elements of form, line, color, and texture. These factors give the area a distinctive quality which distinguishes it from its immediate surroundings.

Landscape Features: The land and water form, vegetation, and structures which compose the characteristic landscape.

Leasable Minerals: Minerals whose extraction from federally managed land requires a lease and the payment of royalties. Leasable minerals include coal, oil and gas, oil shale and tar sands potash, phosphate, sodium, and geothermal steam..

Line: The path, real or imagined, that the eye follows when perceiving abrupt differences in form, color, or texture. Within landscapes, lines may be found as ridges, skylines, structures, changes in vegetative types, or individual trees and branches.

Locatable Minerals: Minerals subject to exploration, development, and disposal by staking mining claims as authorized by the Mining Law of 1872, as amended. This includes deposits of gold, silver, and other uncommon minerals not subject to lease or sale.

M

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.

Management Activity: A surface disturbing activity undertaken on the landscape for the purpose of harvesting, traversing, transporting, protecting, changing, replenishing, or otherwise using resources.

Memorandum of Understanding (MOU): A written but noncontractual agreement between two or more agencies or other parties to take a certain course of action.

Mineral Material Disposal: The sale of sand, gravel, decorative rock, or other materials defined in 43 CFR 3600.

Mining Claim: A mining claim is a selected parcel of Federal Land, valuable for a specific mineral deposit or deposits, for which a right of possession has been asserted under the General Mining Law. This right is restricted to the development and extraction of a mineral deposit. The rights granted by a mining claim protect against a challenge by the United States and other claimants only after the discovery of a valuable mineral deposit. The two types of mining claims are lode and placer. In addition, mill sites and tunnel sites may be located to provide support facilities for lode and placer mining.

Mitigation: Mitigation includes: (a) Avoiding the impacts altogether by not taking an 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, (e) Compensating for the impact by replacing or providing substitute resources or environments (40 CFR 1508.20).

N

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 District: A group of significant archaeological, historical, or architectural sites, within a defined geographic area, that is listed on the National Register of Historic Places. See National Register of Historic Places.

National Register of Historic Places: The official list, established by the National Historic Preservation Act, of the Nation's cultural resources worthy of preservation. The National Register lists archeological, historic, and architectural properties (i.e. districts, sites, buildings, structures, and objects) nominated for their local, state, or national significance by state and federal agencies and approved by the National Register Staff. The National Park Service maintains the National Register. Also see National Historic Preservation Act.

National Scenic Trail: One of the three categories of national trails defined in the National Trails System Act of 1968 that can only be established by act of Congress and are administered by federal agencies, although part or all of their land base may be owned and managed by others. National Scenic Trails are existing regional and local trails recognized by either the Secretary of Agriculture or the Secretary of the Interior upon application.

Native American: 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.

Non-native Species: See Invasive Species and Noxious Weed.

Noxious Weed: According to the Federal Noxious Weed Act (PL 93-629), a weed that causes disease or has other adverse effects on man or his environment and therefore is detrimental to the agricultural and commerce of the United States and to the public health.

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.

O

Off-Highway Vehicle (OHV): Any vehicle capable of or designed for travel on or immediately over land, water, or other natural terrain, deriving motive power from any source other than muscle. OHVs exclude: 1) any non-amphibious registered motorboat; 2), any fire, emergency, or law enforcement vehicle while being used for official or emergency purposes; 3) any vehicle whose use is expressly authorized by a permit, lease, license, agreement, or contract issued by an authorized officer or otherwise approved; 4) vehicles in official use; and 5) any combat or combat support vehicle when used in times of national defense emergencies.

Operation and Maintenance (O&M) Facility: Building and yard constructed to store critical spare parts and provide a building for maintenance services.

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.

Overdraft condition: A condition in which the total volume of water being extracted from the groundwater basin would be greater than the total recharge provided to the basin.

Ozone (O3): A compound consisting of three oxygen atoms. Ozone 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.

P

Paleontological Resources (Fossils): The physical remains of plants and animals preserved in soils and sedimentary rock formations. Paleontological resources are for understanding past environments, environmental change, and the evolution of life.

Paleontology: A science dealing with the life forms of past geological periods as known from fossil remains.

Paleozoic Era: An era of geologic time (600 million to 280 million years ago) between the Late Precambrian and the Mesozoic eras and comprising the Cambrian, Ordovician, Silurian, Devonian, Missippian, Pennsylvanian, and Permian periods.

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.

Perennial Yield: The maximum quantity of water that can be annually withdrawn from a groundwater basin over a long period of time [during which water supply conditions approximate average conditions] without development an overdraft condition.

Petroglyph: Pictures, symbols, or other art work pecked, carved, or incised on natural rock surfaces.

pH (parts hydrogen): The logarithm of the reciprocal of hydrogen-ion concentration in gram atoms per liter.

Physiographic Province: An extensive portion of the landscape normally encompassing many hundreds of square miles, which portrays similar qualities of soil, rock, slope, and vegetation of the same geomorphic origin (Fenneman 1946; Sahrhaftig 1975).

Pleistocene (Ice Age): An epoch in the Quarternary period of geologic history lasting from 1.8 million to 10,000 years ago. The Pleistocene was an epoch of multiple glaciation, during which continental glaciers covered nearly one fifth of the earth's land.

Pliocene: The Pliocene Epoch is the period in the geologic timescale that extends from 5.332 million to 2.588 million years before present.

PM_{10} (inhalable particulate matter): A fractional sampling of suspended particulate matter that approximates the extent to which suspended particles with aerodynamic equivalent diameters smaller than 50 microns penetrate to the lower respiratory tract (tracheo-bronchial airways and alveoli in the lungs). In a regulatory context, PM_{10} is any suspended particulate matter collected by a certified sampling device having a 50 percent collection efficiency for particles with aerodynamic equivalent diameters of 9.5-10.5 microns and an maximum aerodynamic diameter collection limit less than 50 microns. Collection efficiencies are greater than 50 percent for particles with aerodynamic diameters smaller than 10 microns and less than 50 percent for particles with aerodynamic diameters larger than 10 microns.

$PM_{2.5}$ (fine particulate matter): A fractional sampling of suspended particulate matter that approximates the extent to which suspended particles with aerodynamic equivalent diameters smaller than 6 microns penetrate into the alveoli in the lungs. In a regulatory context, $PM_{2.5}$ is any suspended particulate matter collected by a certified sampling device having a 50 percent collection efficiency for particles with aerodynamic equivalent diameters of 2.0-2.5 microns and an maximum aerodynamic diameter collection limit less than 6 microns. Collection efficiencies are greater than 50 percent for particles with aerodynamic diameters smaller than 2.5 microns and less than 50 percent for particles with aerodynamic diameters larger than 2.5 microns.

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: Refers to the period wherein American Indian cultural activities took place before written records and not yet influenced by contact with nonnative culture(s).

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.

Project: The whole of an action that has the potential for resulting in a physical change in the environment, directly or ultimately.

Proposed Action: Tylerhorse Wind Project

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.

Q

Quaternary Age: The most recent of the three periods of the Cenozoic Era in the geologic time scale of the ICS. It follows the Tertiary Period, spanning 2.588 ± 0.005 million years ago to the present. The Quaternary includes two geologic epochs: the Pleistocene and the Holocene Epochs.

R

Recovery Act: See American Reinvestment and Recovery Act of 2009.

Rehabilitation: A management alternative and/or practice which restores landscapes to a desired scenic quality.

Restoration (Cultural Resource): The process of accurately reestablishing the form and details of a property or portion of a property together with its setting, as it appeared in a particular period of time. Restoration may involve removing later work that is not in itself significant and replacing missing original work. Also see Stabilization (Cultural Resource).

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.

Road: A linear route declared a road by the owner, managed for use by low-clearance vehicles having four or more wheels, and maintained for regular and continuous use.

Route: "Routes" represents a group or set of roads, trails, and primitive roads that represents less than 100% of the BLM transportation system. Generically, components of the transportation system are described as routes.

S

Saleable Minerals: Common variety minerals on the public lands, such as sand and gravel, which are used mainly for construction and are disposed by sales or special permits to local governments. See also Mineral Materials.

Scale: The proportionate size relationship between an object and the surroundings in which the object is placed.

Scenery: The aggregate of features that give character to a landscape.

Scenic Area: An area whose landscape character exhibits a high degree of variety and harmony among the basic elements which results in a pleasant landscape to view.

Scenic Quality: The relative worth of a landscape from a visual perception point of view.

Scenic Quality Evaluation Key Factors: The seven factors (land form, vegetation, water, color, adjacent scenery, scarcity, and cultural modifications) used to evaluate the scenic quality of a landscape.

Scenic Quality Ratings: The relative scenic quality (A, B, or C) assigned a landscape by applying the scenic quality evaluation key factors; scenic quality A being the highest rating, B a moderate rating, and C the lowest rating.

Scenic Values: See Scenic Quality and Scenic Quality Ratings.

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.

Sedimentary Rocks: Rocks, such as sandstone, limestone, and shale, that are formed from sediments or transported fragments deposited in water.

Sensitivity Levels: Measures (e.g., high, medium, and low) of public concern for scenic quality.

Shaft: See Mine Shaft.

Significant Impact on the Environment: A substantial, or potentially substantial, adverse change in any of the physical conditions in the area affected by the proposed project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historical or aesthetic significance. An economic or social change by itself is not considered a significant impact on the environment. A social or economic change related to a physical change may be considered in determining whether the physical change is significant.

Special Status Species: Federal- or state-listed species, candidate or proposed species for listing, or species otherwise considered sensitive or threatened by state and federal agencies.

State Historic Preservation Office (SHPO): The official within and authorized by each state at the request of the Secretary of the Interior to act as liaison for the National Historic Preservation Act. Also see National Historic Preservation Act.

State Implementation Plan (SIP): Legally enforceable plans adopted by states and submitted to EPA for approval, which 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.

Subsurface: Of or pertaining to rock or mineral deposits which generally are found below the ground surface.

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.

Supervisory Control and Data Acquisition System (SCADA): A system that allows for controlling and monitoring individual turbines and the wind plant as a whole from the central host computer or a remote personal computer.

T

Tertiary: The Tertiary Period marks the beginning of the Cenozoic Era. It began 65 million years ago and lasted more than 63 million years, until 1.8 million years ago. The Tertiary is made up of 5 epochs: the Paleocene Epoch, the Eocene Epoch, the Oligocene Epoch, the Miocene Epoch, and the Pliocene Epoch.

Texture: The visual manifestations of the interplay of light and shadow created by the variations in the surface of an object or landscape.

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.

Trail: A linear route managed for human-powered, stock, or off-highway vehicle forms of transportation or for historical or heritage values. Trails are not generally managed for use by four-wheel drive or high-clearance vehicles.

V

Vandalism (Cultural Resource): Malicious damage or the unauthorized collecting, excavating, or defacing of cultural resources. Section 6 of the Archaeological Resources Protection Act states that "no person may excavate, remove, damage, or otherwise alter or deface any archaeological resource located on public lands or Indian lands…unless such activity is pursuant to a permit issued under section 4 of this Act."

Variables: Factors influencing visual perception including distance, angle of observation, time, size or scale, season of the year, light, and atmospheric conditions.

Variety: The state or quality of being varied and having the absence of monotony or sameness.

Vehicle Miles Traveled (VMT): The cumulative amount of vehicle travel within a specified or implied geographical area over a given period of time.

Viewshed: The landscape that can be directly seen under favorable atmospheric conditions, from a viewpoint or along a transportation corridor. Protection, rehabilitation, or enhancement is desirable and possible.

Visual Contrast: See Contrast.

Visual Quality: See Scenic Quality.

Visual Resources: The visible physical features on a landscape (e.g., land, water, vegetation, animals, structures, and other features).

Visual Resource Management Classes: Categories assigned to public lands based on scenic quality, sensitivity level, and distance zones. There are four classes. Each class has an objective which prescribes the amount of change allowed in the characteristic landscape.

Visual Resource Management (VRM): The inventory and planning actions taken to identify visual values and to establish objectives for managing those values; and the management actions taken to achieve the visual management objectives.

Visual Values: See Scenic Quality.

W

Wetlands: Permanently wet or intermittently water-covered areas, such as swamps, marshes, bogs, potholes, swales, and glades.

Wilderness Area: An area formally designated by Congress as part of the National Wilderness Preservation System as defined in the Wilderness Act of 1964 (78 Stat.891), Section 2(c).

Wilderness Study Area: A roadless area or island that has been inventoried and found to have wilderness characteristics as described in section 603 of FLPMA and section 2(c) of the Wilderness Act of 1964 (78 Stat. 891). Source for both of these is BLM's IMP and Guidelines for Lands Under Wilderness Review (December 1979).

Wind Turbine Generator (WTG): A rotary device that extracts energy from the wind.

CHAPTER 8
References

1 Introduction and Purpose and Need

U.S. Bureau of Land Management, 2008. National Environmental Policy Act, Handbook H-1790-1, January 2008.

2 Proposed Action and Alternatives

Heartland Wind LLC, 2014. Plan of Development for the Tylerhorse Wind Project, March 19, 2014.

U.S. Bureau of Land Management (BLM), 2012. Final Programmatic Environmental Impact Statement (Final Solar PEIS) for Solar Energy Development in Six Southwestern States, July 2012.

3 Affected Environment

3.2 Air Resources

California Air Resources Board (CARB), 2012b. Area Designation Maps, http://www.arb.ca.gov/desig/adm/adm.htm, page last reviewed May 8, 2012 and accessed March 25, 2013.

____, 2013. Summaries of Air Quality Data, 2010 through 2012, http://www.arb.ca.gov/adam/topfour/topfour1.php, accessed April, 2014.

Sapphos Environmental, Inc, 2014. Tylerhorse Wind Energy Project Air Quality Impact Technical Report, March 2014.

United States Environmental Protection Agency (USEPA), 2011. General Conformity De Minimis Levels, last updated July 22, 2011.

____, 2012. Green Book – Criteria Pollutant Area Summary Report, http://www.epa.gov/air/oaqps/greenbk/ancl2.html, accessed March 25, 2013.

3.3 Global Climate Change

California Air Resources Board (CARB), 2008. Climate Change Scoping Plan. http://www.arb.ca.gov/cc/scopingplan/document/adopted_scoping_plan.pdf, Approved December 2008.

Sapphos Environmental, Inc. 2014. Tylerhorse Wind Energy Project Air Quality Impact Technical Report, March 2014.

United States Environmental Protection Agency (USEPA), 2010. Climate Change, Basic Information. http://www.epa.gov/climatechange/basicinfo.html, Last updated March 21, 2013.

3.4 Cultural Resources

Basgall and Overly, 2004. Prehistoric Archaeology of the Rosamond Lake Basin, Phase II Cultural Resource Evaluations of 41 Sites in Management Region 2, Edwards Air Force Base, California. Report on file, Environmental Management Office, Conservation Branch, Edwards Air Force Base, 2004.

Meyer and Rosenthal. 2007. Geoarchaeological Overview of the Nine Bay Area Counties in Caltrans District 4, Oakland, California. Prepared for Office of Cultural Resources California Department of Transportation, June 2007.

Sapphos Environmental, Inc., 2011. Tylerhorse Wind Energy Project Cultural Resources Technical Report, Kern County, California. Prepared for U.S. Bureau of Land Management and EnXco Development Corporation, July 2011.

_____, 2013. Tylerhorse Wind Energy Project Cultural Resources Technical Report, Kern County, California. Prepared for Bureau of Land Management and Heartland Wind LLC/Iberdrola Renewables, LLC., March 2011.

U.S. Bureau of Land Management (BLM), 1999. California Desert Conservation Area Plan 1980, as amended, 1999.

U.S. Department of the Interior, 1990. How to Apply the National Register Criteria for Evaluation. Department of the Interior, National Park Service. Washington, 1990.

3.5 Environmental Justice

Council on Environmental Quality (CEQ), 1997. Environmental Justice Guidance Under the National Environmental Policy Act. December 10, 1997.

U.S. Bureau of Land Management (BLM), 2005a. BLM Handbook H-1601-1 Land Use Planning Handbook, Appendix D: Social Science Considerations in Land Use Planning Decisions, 2005.

____, 2005b. Final Environmental Impact Report and Statement for the West Mojave Plan. A Habitat Conservation Plan and California Desert Conservation Area Plan Amendment Vol. 1. January. http://www.blm.gov/ca/pdfs/cdd_pdfs/wemo_pdfs/plan/wemo/Vol-1-Chapter2_Bookmarks.pdf, Accessed on April 8, 2013.

____, 2007. California Desert Conservation Area Plan (as amended). http://www.blm.gov/pgdata/etc/medialib/blm/ca/pdf/cdd/cdcaplan.Par.15259.File.dat/CA_Desert_.pdf, Accessed on April 8, 2013.

U.S. Census, 2010. California State and County Quick facts for Kern County and the City of Tehachapi, 2010.

____, 2000. Table DP-1. General Demographic Characteristics: 2000 Kern County, California Census Track 60.05, 2000.

3.6 Lands and Realty

FAA (Federal Aviation Administration), 2012. Federal Aviation Regulation Title 14, Part 7713. Accessed at http://www.gpo.gov/fdsys/pkg/CFR-2012-title14-vol2/xml/CFR-2012-title14-vol2-part77.xml#seqnum77.13, 2012.

Federal Land Policy and Management Act (FLPMA), 2001. Federal Land Policy and Management Act, As Amended, Revised October 2001.

Kern County, 2012. Kern County Zoning Ordinance, 2012.

U.S. Bureau of Land Management (BLM), 1980. The California Desert Conservation Area Plan, 1980 as amended.

____, 2005. Implementation of a Wind Energy Development Program and Associated Land Use.

____, 2008. National Environmental Policy Act Handbook H-1790-1, 2008.

3.7 Livestock Grazing

Fitton, Sam, personal communication, April 2 2013.

U.S. Bureau of Land Management (BLM), 1980. California Desert Conservation Plan ("CDCA Plan"), www.blm.gov/pgdata/etc/medialib//blm/ca/pdf/pdfs/cdd_pdfs.Par.aa6ec747.File.pdf/CA_Desert.df, as amended March 1999.

____, 2001. The Federal Land Policy and Management Act of 1976, As Amended. U.S. Department of the Interior, U.S. Bureau of Land Management Office of Public Affairs, Washington, D.C.

____, 2005, West Mojave Plan—A Habitat Conservation Plan and California Desert Conservation Area Plan Amendment Final Environmental Impact Report and Statement, http:// www.blm.gov/ca/pdfs/cdd_pdfs/wemo_pdfs/plan/wemo/Vol-1-Chapter2_Bookmarks.pdf, January 2011.

____, 2011a. The Taylor Grazing Act, www.blm.gov/wy/st/en/field_offices/Casper/range/taylor.1.html, accessed in December 2012.

____, 2011b, U.S. Bureau of Land Management's Rangeland Administration System (RAS), www.blm.gov/ras/, accessed in December 2012.

____, 2011c. Grazing Permit/Lease Number 0403465 Two-Year Notification Letter, distributed on 21 October 2011.

3.8 Mineral Resources

California Department of Conservation. 2000. California Surface Mining and Reclamation Policies and Procedures. Guidelines for Classification and Designation of Mineral Lands. 2000.

Kern County, 2009. Kern County General Plan: Land Use, Open Space, and Conservation Element. September 22. [online]: http://www.co.kern.ca.us/planning/pdfs/kcgp/KCGPChp1LandUse.pdf, Accessed on April 8, 2013.

Kern County, 2012. Kern County Zoning Ordinance, 2012.

Mineral Resources Data System (MRDS), 2011. Mine, Past or Present Producer, http://tin.er.usgs.gov/ mrds/. Accessed on April 8, 2013.

U.S. Bureau of Land Management (BLM), 2000. California Surface Mining and Reclamation Policies and Procedures, Guidelines for Classification and Designation of Mineral Lands. [online]: http://www.conservation.ca.gov/smgb/Guidelines/Documents/ClassDesig.pdf. Accessed on April 8, 2013.

_____, 2010a. Mining Claims and Sites on Federal Lands. [online]: http://www.blm.gov/pgdata/etc/medialib/blm/wo/MINERALS__REALTY__AND_RESOURCE_PROTECTION_/energy.Par.28664.File.dat/MiningClaims.pdf. Accessed on April 8, 2013.

_____, 2010b. Solid Mineral Programs on the Nation's Federal Land. [online]: http://www.blm.gov/wo/st/en/prog/more/non-energy_minerals/solid_minerals_brochure.html, Accessed on April 8, 2013.

3.9 Noise

Caltrans, 1998. Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects, October 1998.

CH2MHill, 2012, Noise Technical Report Tylerhorse Wind Energy Project, Prepared for Heartland Wind LLC, August 2012.

Federal Transit Administration (FTA). 2006. Transit Noise and Vibration Impact Assessment, May 2006.

U.S. Bureau of Land Management (BLM), 2005. Final Programmatic Environmental Impact Statement on Wind Energy Development on BLM-Administered Lands in the Western United States. U.S. Department of the Interior. June 24. Available online at http://windeis.anl.gov/eis/index.cfm

U.S. Environmental Protection Agency (EPA), 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, Washington, D.C., March 1974.

_____, 1978. Protective Noise Levels, Condensed Version of EPA Levels Document, 1978.

3.10 Paleontological Resources

Kern County, 2009. County of Kern General Plan, Land Use Element, www.co.kern.ca.us/planning/pdfs/kcgp/KCGPChp1LandUse.pdf, Accessed on December 2011.

Kleinfelder, 2011. Limited Feasibility Level Geologic Hazard and Soils Evaluation Proposed Tylerhorse Wind Energy Project, Kern County, California.

Sapphos Environmental (Sapphos), 2011. Environmental Assessment for the Tylerhorse Wind Energy Project, Kern County, California, 2011.

U.S. Bureau of Land Management (BLM), 2005. Final Environmental Impact Report and Statement for the West Mojave Plan. A Habitat Conservation Plan and California Desert Conservation Area Plan Amendment Vol. 1. January. http://www.blm.gov/ca/pdfs/cdd_pdfs/wemo_pdfs/plan/wemo/Vol-1-Chapter2_Bookmarks.pdf, Accessed on December 14, 2011.

_____, 2007. Potential Fossil Yield Classification (PFYC) System for Paleontological Resources on Public Lands, BLM Instruction Memorandum No. 2008-009, 2007.

United States Department of the Interior (USDI), 2000. Assessment of Fossil Management on Federal & Indian Lands, report for the secretary of the interior, December 2011.

3.11 Public Health and Safety

CalRecycle, 2009. History of California Solid Waste Law, 1985-1989. http://www.calrecycle.ca.gov/Laws/Legislation/calhist/1985to1989.htm, Accessed May 3, 2011.

California Department of Public Health (CDPH), 2009. Valley Fever Summary Sheet. http://www.cdph.ca.gov/data/statistics/Documents/cocci-episummary.pdf, Accessed August 25, 2011.

California Department of Toxic Substances Control (DTSC), 2011. Cortese List: Section 65962.5(a), Kern County. http://www.calepa.ca.gov/sitecleanup/corteselist/SectionA.htm, Accessed August 25, 1011.

Centers for Disease Control and Prevention (CDC), 2011a. Division of Vector-Borne Infectious Diseases Website, California: WNV 2011. http://diseasemaps.usgs.gov/wnv_ca_mosquito.html, Accessed August 25, 2011.

_____.2011b. Division of Vector-Borne Infectious Diseases Website, California: SLE 2011, http://diseasemaps.usgs.gov/wnv_ca_mosquito.html.

_____.2011c. Division of Vector-Borne Infectious Diseases Website, California: WEE 2011, http://diseasemaps.usgs.gov/wee_ca_mosquit.html.

Harding et al., 2008. Wind Turbines, flicker, and photosensitive epilepsy: Charactertizing the flashing that may precipitate seizures and optimizing guidelines to prevent them. Epilepsia ,(49 (6):1095-1098, 2008.

Kleinfelder, 2011. Final Limited Feasibility Level Geologic Hazard and Soils Evaluations Proposed Tylerhorse Wind Energy Project. May 2011.

U.S. Bureau of Land Management (BLM), 2005. Final Environmental Impact Report and Statement for the West Mojave Plan. A Habitat Conservation Plan and California Desert Conservation Area Plan Amendment Vol. 1. January. http://www.blm.gov/ca/pdfs/cdd_pdfs/wemo_pdfs/plan/wemo/Vol-1-Chapter2_Bookmarks.pdf Accessed August 29, 2011.

_____, 2007. California Desert Conservation Area Plan (as amended). http://www.blm.gov/pgdata/etc/medialib/blm/ca/pdf/cdd/cdcaplan.Par.15259.File.dat/CA_Desert_.pdf, accessed August 24, 2011.

3.12 Recreation

Kern County Parks and Recreation (KCRP), 2011. www.co.kern.ca.us/parks/, Accessed August 2011.

Tehachapi Valley Recreation and Parks Department (TVRPD). 2011. Central Park. http://www.tvrpd.org/facilities/parks/central-park.html. Accessed September 10

United States Department of Agriculture (USDA) Forest Service, 1982. USDA Forest Service. 1982. Comprehensive management plan for the Pacific Crest National Scenic Trail, 1982.

3.13 Social and Economics

California Economic Development Department (EDD), 2011a. Kern County Local Area Profile, www.labormarketinfo.edd.ca.gov/cgi/databrowsing/localAreaProfileQSResults.asp?selectedarea=Kern+County&selectedindex=15&menuChoice=localAreaPro&state=true&geogArea=0604000029&countyName=, accessed December 1, 2011.

____, 2011b. California Profile, www.labormarketinfo.edd.ca.gov/cgi/databrowsing/localAreaProfileQSResults.asp?selectedarea=California&selectedindex=0&menuChoice=localAreaPro&state=true&geogArea=0601000000&countyName=, accessed December 1, 2011.

____, 2011c. Industry Employment Projections, Bakersfield MSA. http://www.labormarketinfo.edd.ca.gov/?pageid=145.

ePodunk, 2011, Kern County Hotels, www.epodunk.com/cgi-bin/localList.php?local=10346&locTGroup=Hotels&direction=down&sec=0&qty=63&stateAbbv=&stateName=, accessed December 1, 2011.

Kern County, 2011. Kern County Environmental Documents, www.co.kern.ca.us/planning/eirs.asp. accessed December 1.

RV Park Store, 2011. Kern County RV Parks, www.rvparkstore.com/rv-park-directory/california/county/kern/page/5, accessed August 27, 2011.

Tehachapi, 2011. Tehachapi California information, www.city-data.com/city/Tehachapi-California.html, accessed December 1, 2011.

U.S. Bureau of Land Management (BLM), 2005a. BLM Handbook H-1601-1 Land Use Planning Handbook, Appendix D: Social Science Considerations in Land Use Planning Decisions. March 11.

____, 2005b. Final Environmental Impact Report and Statement for the West Mojave Plan - A Habitat Conservation Plan and California Desert Conservation Area Plan Amendment Vol. 1. January, www.blm.gov/ca/pdfs/cdd_pdfs/wemo_pdfs/plan/wemo/Vol-1-Chapter2_Bookmarks.pdf, accessed December 1, 2011.

____, 2007. California Desert Conservation Area Plan (as amended), www.blm.gov/pgdata/etc/medialib/blm/ca/pdf/cdd/cdcaplan.Par.15259.File.dat/CA_Desert.pdf, accessed December 1, 2011.

U.S. Census, 2010 Census 2005-2009 Community Survey.

____, 2011. Metropolitan and Micropolitan Statistical Areas Definitions, www.census.gov/population/www/metroareas/metroarea.html, accessed December 1, 2011.

3.14 Soils Resources

Kleinfelder, 2011. Final Limited Feasibility Level Geologic Hazard and Soils Evaluations Proposed Tylerhorse Wind Energy Project, May 11.

Kern County, 2007. Kern County General Plan, Chapter 4: Safety Element. Amended March 13. [online]: http://www.co.kern.ca.us/planning/pdfs/kcgp/KCGPChp4Safety.pdf, Accessed September 12, 2011.

U.S. Bureau of Land Management (BLM). 2010. Final Environmental Impact Statement, Imperial Valley Solar Project. July.

3.15 Special Designations

DOC (Department of Conservation), 2008. Farmland Mapping and Monitoring Program – Kern County Important Farmland 2008.ftp://ftp.consrv.ca.gov/pub/dlrp/FMMP/pdf/2008/ker08_east.pdf, Accessed September 13.

U.S. Bureau of Land Management (BLM), 2011. National Landscape Conservation System. http://www.blm.gov/wo/st/en/prog/blm_special_areas/NLCS.html, Accessed September 13.

3.16 Transportation and Public Access – Off Highway Vehicle

Caltrans, 2010. Annual Average Daily Traffic (AADT), 2011.

____, 2010. California Manual on Uniform Traffic Control Devices for Streets and Highways, 2010.

Kern County, 2009. Kern County General Plan Circulation Element, 2011.

Kern Regional Transit, 2011. Bus Route Map and Timetables, 2011.

Ruettgers & Schuler, 2011. Tylerhorse Traffic Impact Study Report, 2011.

Transportation Research Board (TRB), 2000. Highway Capacity Manual, 2000.

U.S. Bureau of Land Management (BLM), 2002. California Desert Conservation Area Plan Amendment EA, 2002.

____, 2003. Western Mojave Desert Off-Road Vehicle EA and Draft CDCA Plan Amendment, 2003

____, 2005. Western Mojave Habitat Conservation Plan and California Desert Conservation Area Plan Amendment, 2005.

US Federal Government. 2011. Office of Secretary of Transportation, Code of Fed Regulations Title 49 Transportation.

3.17 Vegetation Resources

California Department of Fish and Game (CDFG), 2000. Guidelines for assessing the effects of proposed projects on rare, threatened, and endangered plants and natural communities. (Revision of 1983 guidelines.) Sacramento, CA, 2 pp.

California Department of Fish and Wildlife (CDFW), 2013. Rarefind 4 Electronic Database. California Natural Diversity Database. Data search for the following 7.5 minute USGS Quadrangles: Tylerhorse Canyon, Monolith, Tehachapi South, Cummings Mtn., Willow Springs, Leibre Twins, Little Buttes, Fairmont Butte, and Neenach School, March 27, 2013.

California Native Plant Society (CNPS), 2013. Inventory of Rare and Endangered Plants (online edition, v8-01a). California Native Plant Society. Sacramento, CA. Accessed on Wednesday, March 27, 2013

California Natural Diversity Database (CNDDB), 2013. Rarefind 4. CDFG's Electronic database, Sacramento, California. Data search for the following 7.5 minute USGS Quadrangles: Tylerhorse Canyon, Monolith, Tehachapi South, Cummings Mtn., Willow Springs, Leibre Twins, LittlButtes, Fairmont Butte, and Neenach School, March 27, 2013.

Holland, Robert F, 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. Sacramento, CA: California Department of Fish and Game.

Sapphos Environmental, Inc. 2011. Tylerhorse Wind Energy Project Biological Resources Technical Report, December 2011.

____, 2011b. Tylerhorse Wind Energy Project Biological Assessment, December 22, 2011.

____, 2013. Tylerhorse Wind Energy Project. Addendum to the Biological Resources Technical Report for the Tylerhose Wind Energy Project, March 26, 2013.

____, 2014. Tylerhorse Wind Energy Project. Addendum No. 2 to the Biological Resources Technical Report for the Tylerhose Wind Energy Project, March 28, 2014.

Sawyer, J.O and T. Keeler-Wolf, 1995. A Manual of California Vegetation, 1st ed. [http://davisherb.ucdavis.edu/CNPSActiveServer/].

U.S. Army Corps of Engineers (USACE), 2006. Letter from Antal Szijj, Acting Chief of the North Coast Section, Regulatory Branch, U.S. Army Corps of Engineers, to Dr. Irena Mendez, Sapphos Environmental, Inc. Subject: Letter No. 2006-01345-AOA dated June 22, 2006, regarding permit to construct a wind energy project, 2006.

U.S. Bureau of Land Management (BLM), 1999. California Desert Conservation Area Plan 1980, as amendedBureau of Land Management. 2009. Instruction Memorandum No. CA-2009-026, Survey Protocols Required for NEPA and ESA Compliance for BLM Special Status Plant Species, July 7, 2009.

____, 2005. Final Environmental Impact Report and Statement for the West Mojave plan. A Habitat Conservation Plan and California Desert Conservation Area Plan Amendment. The BLM West Mojave Plan (WEMO); January 2005.

____, 2008. Manual 6840 – Special Status Species Management. December, 2008[http://www.blm.gov/pgdata/etc/medialib/blm/wo/Information_Resources_Management/policy/blm_manual.Par.43545.File.dat/6840.pdf].

____, 2009. Instruction Memorandum No. CA-2009-026, Survey Protocols Required for NEPA and ESA Compliance for BLM Special Status Plant Species. July 7, 2009.

U.S. Fish and Wildlife Service (USFWS). 2013. Subject: Species List for Tylerhorse Wind Project, Document Number: 130327052625. March 27, 2013.

3.18 Visual Resources

Caltrans, 1995. Transportation Code. Title 6. Roadways. Chapter 222. State Highway Names. Subchapter A.State Highway Names in General. Accessed at http://www.statutes.legis.state.tx.us/Docs/TN/htm/TN.225.htm

____. 2011. California Scenic Highway Mapping System, http://www.dot.ca.gov/hq/LandArch/scenic_highways/, Accessed in August 2011.

Federal Aviation Administration (FAA), 2005. Technical Note: Development Obstruction Lighting Standards for Wind Turbine Farms, 2005.

Otak Inc. 2012. BLM Ridgecrest Field Office Visual Resource Inventory GIS Geodatabase, 2012.

Schiffer-Burdett, Joann, Outdoor Recreation Planner, Bureau of Land Management, personal communication with Allisa Carlson, 2013.

Sapphos Environmental, Inc. 2011. Tylerhorse Wind Energy Project Visability Analysis Technical Report, Prepared for enXco Development Corporation, December 28, 2011.

____, 2012. Tylerhorse Wind Energy Project Visibility Technical Report, prepared for EnXco Development Corporation, May 2012.

U.S. Bureau of Land Management (BLM). 1980. The California Desert Conservation Area Plan, as amended, 1980.

____, 1984. Visual Resource Management Manual 8400, April 5, 1984.

____, 1986a. Visual Resource Inventory Manual H 8410 1, January 17, 1986.

____, 1986b. Visual Resource Contrast Rating Manual 8431, January 17, 1986.

3.19 Water Resources

California Department of Water Resources (DWR), 2004. California's Groundwater Bulletin 118: South Lahontan Hydrologic Region, Fremont Valley Groundwater Basin. [online]: http://www.water.ca/bulletin_118/basindescriptions/6-46.pdf, Accessed on September 14, 2011.

Pinnacle, 2012. Hydrology Study for Tylerhorse Wind Energy Project, Revised January 4, 2012.

3.20 Wild Horse and Burros

U.S. Bureau of Land Management (BLM), 2011a. "Wild Horses and Burros." http://www.blm.gov/ca/st/en/prog/wild_horse_and_burro.1.html, Accessed on September 1, 2011.

3.21 Wildland Fire Ecology

Brooks, M. L., 1998. Ecology of a biological invasion: alien annual plants in the Mojave Desert. Ph.D. Dissertation University of California, Riverside. 186. p.

California Department of Fire and Forestry (CAL FIRE), 2010. Strategic Fire Plan for California, 2010.

California Public Utilities Commission (CPUC), 2009. General Order 95 Section III, Requirements for all lines, 2009

Federal Energy Regulating Commission (FERC), 2011. Petition for Approval of Proposed Reliability Standard FAC-003-2—Transmission Vegetation Management, Docket No. RM12-4-000 (Dec. 21, 2011), 2001.

Malo, J. E., and F. Suarez, 1995. Cattle dung and the fate of Biserrulapelecinus L. in a Mediterranean pasture: seed dispersal, germination and recruitment. Botanical Journal of the Linnean Society 118: 139-48, 1995.

U.S. Bureau of Land Management (BLM), 2002. Proposed Northern and Eastern Colorado Desert Coordinated Management Plan and Final Environmental Impact Statement, 2002

U.S. Environmental Protection Agency (EPA), 1996. Breathing Easier: a Report on Air Quality in EPA Region 9, 1996.

U.S. Fish and Wildlife Service (USFWS), 2008. Modication of Federal Wildland Fire Management Polciy Guidnace, 2008.

3.22 Wildlife Resources

California Natural Diversity Database (CNDDB), 2013. Rarefind 4. CDFG's Electronic database, Sacramento, California. Data search for the following 7.5 minute USGS Quadrangles: Tylerhorse Canyon, Monolith, Tehachapi South, Cummings Mtn., Willow Springs, Leibre Twins, LittlButtes, Fairmont Butte, and Neenach School, March 27, 2013.

California Energy Commission (CEC) and California Department Fish Game (CDFG), 2007. California Guidelines for Reducing Impacts to Birds and Bats from Wind Energy Development, September 26, 2007.

Meretsky, V.J., and N.F.R. Snyder, 1992. Range Use and Movements of California Condors, Condor, 94: 313–335, 1992.

Sapphos Environmental, Inc. 2011a. Tylerhorse Wind Energy Project Biological Resources Technical Report. Prepared for the Bureau of Land Management, December 2011.

____, 2011b. Draft Biological Assessment for the Tylerhorse Wind Energy Project, 2011.

Sapphos Environmental, Inc., 2013. Memorandum for the Record 2.6 1612-028.M2. Subject: Summary of Golden Eagle Use at Tylerhorse Wind Energy Project and Surrounding Renewable Energy Projects and Transmittal of Tylerhorse Bird Use Count Data Submitted to Bureau of Land Management, California Desert District Office, June 14, 2013.

South Coast Wildlands, 2008. South Coast Missing Linkages: A Wildland Network for the South Coast Ecoregion, 2008.

Walters et al, 2008. Status of the California Condor and Efforts to Achieve its Recovery, 2008.

U.S. Bureau of Land Management (BLM), 1999. California Desert Conservation Area Plan 1980, as amended. BLM (U.S. Bureau of Land Management), 2009

____, 2006a. Western Mojave Plan. March 2006.

USFWS, 2010. Recommended Guidelines – Recommendations on developing effective measures to mitigate impacts to wildlife and their habitats related to land-based wind facilities, 2010.

USFWS, 2012. Draft Voluntary, Land-Based Wind Energy Guidelines, 2012

USFWS, 2013. Environmental Conservation Online System. http://ecos.fws.gov/tess_public/pub/listedAnimals.jsp. Accessed May 2013.

4 Environmental Consequences

4.1 Introduction

Antelope Valley Times, 2013. MidAmerican Solar acquires Antelope Valley solar projects, http://www.theavtimes.co m/2013/01/03/midamerican-solar-acquires-antelope-valley-solar-projects/, accessed February 1, 2013.

California Energy Commission (CEC), 2011. "Transcript of June 21, 2011 Mandatory Status Conference." http://www.energy.ca.gov/sitingcases/solar_millennium_ridgecrest/documents/2011-06-21_Transcript.pdf, Accessed August 25, 2011.

Council on Environmental Quality (CEQ), 1997. Environmental Justice Guidance Under the National Environmental Policy Act. December 10, 1997.

Kern County. 2011a. “Alternative Energy Projects 2005 – Present: Wind Projects.” http://www.co.kern.ca.us/planning/pdfs/renewable/wind_projects.pdf, Accessed August 25, 2011.

Kern County, 2011b. “Solar Projects.” http://www.co.kern.ca.us/planning/pdfs/renewable/solar_projects.pdf, Accessed August 25, 2011.

Los Angeles County, 2011a. “Los Angeles County Renewable Energy Projects – Submitted as of June 2011.” http://planning.lacounty.gov/assets/upl/data/energy_list-map.pdf, Accessed August 25, 2011.

Sempra US Gas & Power, LLC, 2012. Rosamond Solar, 2012.

Southern California Edison (SCE), 2013a. Tehachapi Renewable Transmission Project Segments 1-3. http://www.sce.com/PowerandEnvironment/Transmission/ProjectsByCounty/Multi-CountyProjects/TRTP1-3/default.htm, accessed February 1, 2013.

_____, 2013b. Tehachapi Renewable Transmission Project Segments 4-11, http://www.sce.com/PowerandEnvironment/Transmission/ProjectsByCounty/Multi-CountyProjects/TRTP4-11/tehachapi-4-11.htm, accessed February 1, 2013.

_____, 2013c. Banducci Substation Project, http://www.sce.com/PowerandEnvironment/Transmission/ProjectsByCounty/KernCounty/Banducci/default.htm, accessed February 1, 2013.

_____, 2013d. Downs Substation Project, http://www.sce.com/PowerandEnvironment/Transmission/ProjectsByCounty/KernCounty/downs/downs-substation-project.htm, accessed February 1, 2013.

Western Wind Energy, 2013. Windstar, http://www.westernwindenergy.com/s/Windstar_I.asp, accessed February 1, 2013.

U.S. Bureau of Land Management (BLM), 2005. Deep Rose Right-of-Way Offer. http://www.blm.gov/pgdata/etc/medialib//blm/ca/pdf/pdfs/ridgecrest_pdfs.Par.e7ca5336.File.pdf/Deep_Rose_Offer.pdf, Accessed August 25, 2011.

_____, 2011a. “BLM Initiates Environmental Review for Proposed Wind Farm in Kern County.” http://www.blm.gov/ca/st/en/info/newsroom/2011/january/CDD1122_risingtreeNOI.html, Accessed August 25, 2011.

_____, 2011b. “Notice of Intent To Prepare an Environmental Impact Statement for the enXco Development Corporation’s Tylerhorse Wind Project, Kern County, CA, and Possible Land Use Plan Amendment; CACA 51561.” http://www.blm.gov/ca/st/en/info/fed_reg_archives/2011/july/tylerhorse_project_NOI.html, Accessed August 25, 2011.

_____, 2011c. Renewable Energy Projects in the California Desert District. http://www.blm.gov/pgdata/content/ca/en/fo/cdd/alternative_energy.html, Accessed August 25, 2011.

_____, 2011d. “Furnace Creek Road Alternatives.” http://www.blm.gov/pgdata/etc/medialib/blm/ca/pdf/ridgecrest.Par.35887.File.dat/Furnace%20Creek%20Route%20Desig%20Alternatives.pdf, Accessed August 25, 2011.

_____, 2011e. “BLM to Analyze Geothermal Lease Proposals in Inyo County.” http://www.blm.gov/ca/st/en/info/newsroom/2011/july/analyze_inyo_lease.html, Accessed August 25, 2011.

4.2 Air Resources

Sapphos Environmental, Inc. 2011. Tylerhorse Wind Energy Project Air Quality Impact Technical Report, May 2011.

_____. 2013. Tylerhorse Wind Energy Project – Alternative 2 Emissions Analysis.

U.S. Environmental Protection Agency (USEPA), 2011. General Conformity De Minimis Levels, last updated July 22, 2011.

4.3 Global Climate Change

Sapphos Environmental, Inc. 2011. Tylerhorse Wind Energy Project Air Quality Impact Technical Report, May 2011.

_____. 2013. Tylerhorse Wind Energy Project – Alternative 2 Emissions Analysis.

4.4 Cultural Resources

Sapphos Environmental, Inc. 2013. Tylerhorse Wind Energy Project Cultural Resources Technical Report, March 2013.

4.5 Environmental Justice

CEQ (Council on Environmental Quality), 1997. Environmental Justice Guidance Under the National Environmental Policy Act. December 10, 1997.

U.S. Environmental Protection Agency (USEPA), 1998, Guidance for Incorporating Environmental Justice Concerns in EPA's Compliance analyses, April, 1998.

4.6 Lands and Realty

Kern County, 1970, Zoning Map 216, www.co.kern.ca.us/ess/zmapindx.asp, January 19, 1970.

____, 200., PdV Draft Environmental Impact Report, www.co.kern.ca.us/planning/pdfs/eirs/PdV/PdV_TOC.pdf, September 2007.

____, 2009a. Kern County General Plan, www.co.kern.ca.us/planning/pdfs/kcgp/KCGP.pdf, September 22, 2009.

____, 2009b. Kern County General Plan Land Use, Open Space and Conservation Element, www.co.kern.ca.us/planning/pdfs/kcgp/KCGPChp1LandUse.pdf, September 22, 2009.

____, 2009c. Kern County General Plan Energy Element, www.co.kern.ca.us/planning/pdfs/kcgp/KCGPChp5Energy.pdf, September 22, 2009.

____, 2010. Pacific Wind Energy Project Draft Environmental Impact Report, www.co.kern.ca.us/planning/pdfs/eirs/PacWind/pacwind_deir.html, June 17, 2010.

____, 2011a. Planning Documents, www.co.kern.ca.us/planning/plandoc.asp, accessed in December 2011.

____, 2011b. Zoning Ordinance, www.co.kern.ca.us/planning/pdfs/KCZODec11.pdf, December 2011.

____, 2011c. Kern County Renewable Energy Projects, www.co.kern.ca.us/planning/renewable_energy.asp, accessed in December 2011.

____, 2011d. Solar Projects, www.co.kern.ca.us/planning/pdfs/renewable/solar_projects.pdf, accessed in December, 2011.

Kern County Board of Supervisors, 1982a. Kern County General Plan Eastern Section Map, www.co.kern.ca.us/planning/pdfs/kcgp/kc_gp_east.pdf, adopted on March 1, 1982.

____, 1982b. Kern County General Plan Tehachapi East Priority Area Map, www.co.kern.ca.us/planning/pdfs/kcgp/kc_gp_pa_tehachapi_east.pdf, March 1, 1982.

U.S. Bureau of Land Management (BLM), 1980. California Desert Conservation Area Plan 1980 ("CDCA Plan"), www.blm.gov/pgdata/etc/medialib/blm/ca/pdf/cdd/cdcaplan.Par.15259.File.dat/CA_Desert_.pdf, amended March 1999.

____, 2005a. BLM Wind Energy Policies and Program Best Management Practices (as amended by Instruction Memorandum 2009-043), www.blm.gov/pgdata/etc/medialib/blm/id/plans/cottonwood_rmp/new_documents.Par.37040.File.dat/ApM_Wind_Program_508.pdf, December 15, 2005.

____, 2005b. Record of Decision: Implementation of a Wind Energy Development Program and Associated Land Use Plan Amendments, windeis.anl.gov/documents/docs/WindPEISROD.pdf, December 15, 2005.

____, 2005c. Land Use Planning Handbook (H-1601-1), http://www.blm.gov/pgdata/etc/medialib/blm/ak/aktest/planning/planning_general.Par.65225.File.dat/blm_lup_handbook.pdf, March 2005, 2005.

____, 2008. Wind Energy Development Policy (as amended by Instruction Memorandum 2009-043), www.blm.gov/wo/st/en/info/regulations/Instruction_Memos_and_Bulletins/national_instruction/2009/IM_2009-043.html, December 19, 2008.

____, 2011a. Master Title Plats and Historical Indices Search, LR2000 Reports, Automated Mining Claims Systems, accessed in December 2011.

____, 2011b. Wind Energy Development Programmatic EIS Information Center, windeis.anl.gov/, accessed in December 2011.

____, 2011c. Plan of Development for the Tylerhorse Wind Energy Project, developed by enXco Development Corporation for BLM Right-of-way Application CACA 51561, September 1, 2011.

4.7 Livestock Grazing

Fitton, Sam. Personal communication. April 2, 2013

Harris, Glenn. personal communication, December 5, 2011.

U.S. Bureau of Land Management (BLM), 1999, Approval of Central California Standards and Guidelines for Livestock Grazing, July 13, 2000.

4.8 Mineral Resources

Federal Register, 2011. Rules and Regulations. Volume 76, Number 80. Tuesday, April 26, 2011.

4.9 Noise

CH2MHill, 2012. Noise Technical Report Tylerhorse Wind Energy Project, Prepared for Heartland Wind LLC, August 2012.

Federal Transit Administration (FTA), 2006. Transit Noise and Vibration Impact Assessment, May 2006.

International Organization for Standardization (ISO). 1996. 9613-2, Acoustics—Attenuation of Sound during Propagation Outdoors—Part 2: General Method of Calculation, 1996.

U.S. Bureau of Land Management (BLM), 2005. Final Programmatic Environmental Impact Statement on Wind Energy Development on BLM-Administered Lands in the Western United States. U.S. Department of the Interior, June 24, 2005.

4.10 Paleontological Resources

Sapphos Environmental, Inc., 2011. Environmental Assessment for the Tylerhorse Wind Energy Project, Kern County, California, 2011.

4.11 Public Health and Safety

Harding et al., 2008. Wind Turbines, flicker, and photosensitive epilepsy: Charactertizing the flashing that may precipitate seizures and optimizing guidelines to prevent them. Epilepsia ,(49 (6):1095-1098, 2008.

4.12 Recreation

U.S. Bureau of Land Management (BLM), 1980. California Desert Conservation Plan ("CDCA Plan"), www.blm.gov/pgdata/etc/medialib//blm/ca/pdf/pdfs/cdd_pdfs.Par.aa6ec747.File.pdf/CA_Desert.df, as amended March 1999.

4.13 Social and Economic Impacts

California Energy Commission (CEC), 1992. Crockett Cogeneration Project. Appendix X: Analysis of Property Value Impacts of the Crockett Cogeneration Project

California Public Utilities Commission (CPUC). 2011. Tehachapi Renewable Transmission Project EIR. http://docs.cpuc.ca.gov/environ/tehachapi_renewables/finalEIR.htm. Accessed September 7.

Hoen, B., Wiser, R., Cappers, P., Thayer, M., Sethi, G., 2009. Ernest Orlando Lawrence Berkeley National Laboratory, The Impact of Wind Power Projects on Residential Property Values in the United States: A Multi-Site Hedonic Analysis. Environmental Energy Technologies Division. December 2009

Kern County, 2011. Kern County Environmental Documents. http://www.co.kern.ca.us/planning/eirs.asp. Accessed September 7, 2011.

Kinnard, W.N. and Dickey, S.U., 1995. "A Primer on Proximity Impact Research: Residential Property Values Near High-Voltage Transmission Lines." Real Estate Issues. Vol. 20, No. 1. April, pp. 23-29, 1995.

McCann, Richard, 1999. A Review of the Literature on Property Value Impacts from Industrial Activities. M. Cubed (Working Paper), 1999.

4.14 Soils Resources

Kleinfelder, 2011, Limited Feasibility Level Geologic Hazard and Soils Evaluation Proposed Tylerhorse Wind Energy Project, Kern County, California, 2011.

U.S. Bureau of Land Management (BLM). 2005. Final Programmatic Environmental Impact Statement on Wind Energy Development on BLM-Administered Lands in the Western United States. U.S. Department of the Interior. June 24, 2005.

4.15 Special Designations

U.S. Bureau of Land Management (BLM), 1980. California Desert Conservation Plan ("CDCA Plan"), www.blm.gov/pgdata/etc/medialib//blm/ca/pdf/pdfs/cdd_pdfs.Par.aa6ec747.File.pdf/CA_Desert.df, as amended March 1999.

4.16 Transportation and Public Access – Off Highway Vehicle

U.S. Bureau of Land Management (BLM), 198., California Desert Conservation Plan ("CDCA Plan"), www.blm.gov/pgdata/etc/medialib//blm/ca/pdf/pdfs/cdd_pdfs.Par.aa6ec747.File.pdf/CA_Desert.df, as amended March 1999.

____, 2002. California Desert Conservation Area Plan Amendment for the Western Colorado Desert Route of Travel Designation Environmental Assessment, www.blm.gov/ca/news/pdfs/weco_2002/weco2002.pdf, accessed December 1, 2011.

____, 2003. Western Mojave Desert Off Road Vehicle Designation Project Environmental Assessment (EA) and Draft CDCA Plan Amendment, www.blm.gov/ca/st/en/fo/cdd/wemo_ohvdesigproj.html, accessed December 1, 2011.

____, 2005. Western Mojave Plan – Habitat Conservation Plan and CDCA Plan Amendment, www.blm.gov/ca/pdfs/cdd_pdfs/wemo_pdfs/plan/wemo/Vol-1-Chapter1_Bookmarks.pdf, accessed December 1, 2011.

Kern County, 2009. Kern County General Plan – Circulation Element, www.co.kern.ca.us/planning/pdfs/kcgp/KCGPChp2Circulation.pdf, accessed December 1, 2011.

Ruettgers & Schular Civil Engineers, 2011. Tylerhorse Wind Energy Project Traffic Impact Study Report, April 27, 2011.

Transportation Research Board (TRB), 2000. Highway Capacity Manual, December 2000.

4.17 Vegetation Resources

California Department of Fish and Game, 2004. Rarefind 2: A Database Application for the Use of the California Department of Fish and Game Natural Diversity Database, Sacramento, CA, 2004.

____, 2005. Rarefind 3: A Database Application for the Use of the California Department of Fish and Game Natural Diversity Database, Sacramento, CA, 2005.

California Invasive Plant Council (Cal-IPC), 2006. Invasive Plant Inventory, December 2006.

California Native Plant Society, 1995. A Manual of California Vegetation, www.ice.ucdavis.edu/cnps/intro.html#classify, prepared by Sawyer, J.O., and T. Keeler-Wolf, 1995.

Sapphos Environmental, Inc, 2011a. Tylerhorse Wind Energy Project Biological Assessment, Pasadena, CA.

Sapphos Environmental, Inc. 2013. Tylerhorse Wind Energy Project. Addendum to the Biological Resourcs Technical Report for the Tylerhose Wind Energy Project, March 26, 2013.

Szijj, Antal, 2006. Letter from Antal Szijj, Acting Chief of the North Coast Section, Regulatory Branch, U.S. Army Corps of Engineers, to Dr. Irena Mendez, Sapphos Environmental, Inc, Subject: Letter No. 2006-01345-AOA dated June 22, 2006, regarding permit to construct a wind energy project, July 10, 2006

U.S. Bureau of Land Management (BLM), 1980. California Desert Conservation Plan ("CDCA Plan"), www.blm.gov/pgdata/etc/medialib//blm/ca/pdf/pdfs/cdd_pdfs.Par.aa6ec747.File.pdf/CA_Desert.df, as amended March 1999.

____, 2005, Final Environmental Impact Report and Statement for the West Mojave Plan. A Habitat Conservation Plan and California Desert Conservation Area Plan Amendment Vol. 1. January, www.blm.gov/ca/pdfs/cdd_pdfs/wemo_pdfs/plan/wemo/Vol-1-Chapter2_Bookmarks.pdf, accessed in December 1, 2005.

4.18 Visual Resources

Sapphos Environmental, Inc., 2012. Tylerhorse Wind Energy Project Visibility Technical Report, prepared for EnXco Development Corporation, May 2012.

U.S. Bureau of Land Management (BLM), 2005. West Mojave Plan—A Habitat Conservation Plan and California Desert Conservation Area Plan Amendment Final Environmental Impact Report and Statement, http://www.blm.gov/ca/pdfs/cdd_pdfs/wemo_pdfs/plan/wemo/Vol-1-Chapter2_Bookmarks.pdf, January 2011.

4.19 Water Resources

Pinnacle Civil Engineering (Pinnacle), 2012. Hydrology Study for Tylerhorse Wind Energy Project, County of Kern, State of California, January 4, 2012.

U.S. Bureau of Land Management (BLM), 2011, Plan of Development for the Tylerhorse Wind Energy Project, Revised September 1, 2011.

4.20 Wildland Fire Ecology

Brooks, M.L., T.C. Esque, and T. Duck, 2003. Fuels and fire regimes in creosostebush, blackbrush, and interior chaparral shrublands. Technical Report for the Southern Utah Demonstration Fuels Project, USDA, Forest Service, Rocky Mountain Research Station, Fire Science Lab, Missoula, Montana. 17pp. [Technical Report]

Lipsett, Michael, 2008. Wildfire Smoke: A Guide for Public Health Officials. July 2008.

United States Department of Agriculture (USDA), 2005. Wildland Fire in Ecosystems: Effect of Fire on Soil and Water. General Technical Report RMRS-GTR-42-vol. 4. Ogden, Utah: USDA, Forest Service, Rocky Mountain Research Station. September 2005.

4.21 Wildlife Resources

Anderson, R., Neumann, N., Tom, J., Erickson, W.P., Strickland, M.D., Bourassa, M., Bay, K.J., Sernka, K.J., 2004. Avian Monitoring and Risk Assessment at the Tehachapi Pass Wind Resource Area, October 2, 1996 – May 27, 1998 (NREL/SR-500-36416). September 2004.

Avian Power Line Interaction Committee (APLIC), 2006. Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006. PIPER Final Project Report CEC-500-2006-022.

____, 2012. Reducing Avian Collisions with Power Lines: the State of the Art in 2012. 2012.

Bolster, Betsy, C, 2005, Lasiurus cinereus Hoary Bat Species Accounts, Rapid City, ND: Western Bat Working Group, 2005.

California Department of Fish and Game (CDFG), 2003 Petition Evaluation for Western Burrowing Owl (Athene cunicularia hypugaea). October. 2003.

____, 2012, Staff Report on Burrowing Owl Mitigation, March 7, 2012.

California Department of Fish and Wildlife (CDFW), 2013, California Natural Diversity Database Data Request for Tejon Canyon, 2.2 Miles SSW of Cummings Mountain Peak, 4.1 Miles WNW Of Twin Lakes (Town), March 27, 2013.

California Energy Commission and California Department of Fish and Game (CEC and CDFG), 2007. California Guidelines for Reducing Impacts to Birds and Bats from Wind Energy Development. Commission Final Report. California Energy Commission, Renewables Committee, and Energy Facilities Siting Division, and California Department of Fish and Game, Resources Management and Policy Division. CEC-700-2007-008-CMF. October 2007.

Erickson, W.P., Johnson, G.D., Strickland, M.D., Young, D.P., Sernka, K.J., Good, R.E., 2001. Avian Collisions with Wind Turbines: A Summary of Existing Studies and Comparisons to Other Sources

of Avian Collision Mortality in the United States, prepared for the National Wind Coordinating Committee, August 2001.

Erickson, W., Johnson, G., Young, D., Strickland, D., Good, R., Bourassa, M., Bay, K., Sernka, K., 2002. Synthesis and Comparison of Baseline Avian and Bat Use, Raptor Nesting and Mortality Information from Proposed and Existing Wind Developments, prepared for Bonneville Power Administration, December 2002.

ICF International (ICF), 2012. Altamont Pass Wind Resource Area Bird Fatality Study, Bird Years 2005 – 2010, prepared for Alameda County Community Development Agency, November 2012.

Kerlinger, P., 2001, Avian Mortality at Communication Towers: A Review of Recent Literature, Research, and Methodology, www.towerkill.com, Arlington, VA: U.S. Fish and Wildlife Service.

Perkins, Mark, 2005. Lasionycteris noctivagans Silver-haired Bat, Species Accounts, Rapid City, ND: Western Bat Working Group.

Rempel, Jessica, 2013. Personal communication with Amy Fesnock, BLM. August 27, 2013.

Sapphos Environmental, Inc, 2011a. Tylerhorse Wind Energy Project Biological Assessment, December 2011.

____, 2011b. Tylerhorse Wind Energy Project Biological Resources Technical Report, December 22, 2011.

____, 2011c. Tylerhorse Wind Energy Project Bird and Bat Conservation Strategy, December 9, 2011.

____, 2013. Tylerhorse Wind Energy Project. Addendum to the Biological Resourcs Technical Report for the Tylerhose Wind Energy Project, March 26, 2013.

Smallwood, S., 2013. Personal communication with Jessica Rempel, USWFS, April 12, 2013.

Smallwood, K.S., Thelander, C.G., 2005. Bird Mortality at the Altamont Pass Wind Resource Area (NREL/SR-500-36973), prepared for the National Renewable Energy Laboratory, August 2005.

United States Fish and Wildlife Service (USFWS), 2010. Interim Guidelines for the Development of a Project Specific Avian and Bat Protection Plan for Wind Energy Facilities. US Fish and Wildlife Service Pacific Southwest Region.

____, 2011a. Draft Eagle Conservation Plan Guidance, January 2011.

____, 2011b. Revised Recovery Plan for the Mojave Population of the Desert Tortoise, May 2011.

____, 2012. Land-Based Wind Energy Guidelines, March 23, 2012.

____, 2013. Eagle Conservation Plan Guidance. Module 1: Land-based Wind Energy Development. Version 2. April 2013

Western EcoSystems Technology, Inc. (West), 2012. Technical Memorandum: Results of Bat Acoustic Surveys at the Proposed Alta East Wind Resource Area, Kern County, California, January 16, 2012.

4.23 Irreversible and Irretrievable Commitment of Resources

U.S. Bureau of Land Management, 2008. National Environmental Policy Act, Handbook H-1790-1, January 2008.

4.24 Short-term vs. Long-term Productivity of the Environment

U.S. Bureau of Land Management, 2008. National Environmental Policy Act, Handbook H-1790-1, January 2008.

5 Consultation, Coordination and Public Involvement

Kern County, 2012. Kern County Zoning Ordinance, 2012.

U.S. Bureau of Land Management, 2008. National Environmental Policy Act, Handbook H-1790-1, January 2008.