UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

JUL 17 2014

Dr. Jane Summerson
Hawaii Clean Energy PEIS Document Manager
U.S. Department of Energy – NNSA
P.O. Box 5400, Bldg. 401 KAFB East
Albuquerque, NM 87185

Subject: Hawaii Clean Energy Draft Programmatic Environmental Impact Statement (CEQ# 20140121)

Dear Dr. Summerson:

The U.S. Environmental Protection Agency has reviewed the Hawaii Clean Energy Draft Programmatic Environmental Impact Statement. Our comments are provided pursuant to the National Environmental Policy Act, Council on Environmental Quality regulations (40 CFR Parts 1500-1508), and our NEPA review authority under Section 309 of the Clean Air Act.

The EPA strongly supports the state of Hawaii in achieving the Hawaii Clean Energy Initiative goals to reduce reliance on fossil fuels and meet 70 percent of Hawaii's energy needs by 2030 through clean energy, including energy efficiency and conservation measures (30 percent) and renewable energy generation from local sources (40 percent). Accelerating the development of renewable resources and the deployment of clean energy technologies will help Hawaii meet its energy demand, reduce dependence on imported oil, create new jobs, and provide for increased energy security, while reducing greenhouse gas emissions.

The Hawaii Clean Energy PEIS identifies 31 technologies or activities that are currently, or could reasonably be deployed in Hawaii. The 31 technologies are grouped into the following five clean energy categories: 1) energy efficiency; 2) distributed renewable energy technologies; 3) utility-scale renewable energy technologies; 4) alternative transportation fuels and modes; and 5) electrical transmission and distribution. The Draft PEIS analyzes the potential environmental impacts and best management practices associated with 27 of the 31 clean energy technologies or activities. The Department of Energy will utilize the PEIS in making decisions about future funding or other actions to support the state of Hawaii in achieving the HCEI goals. The state of Hawaii intends that the PEIS be used as a reference document when preparing project-specific Environmental Impact Statements and Environmental Assessments.

As a cooperating agency, EPA Region 9 submitted comments on preliminary versions of the PEIS, as well as the August 10, 2012 Amended Notice of Intent for the Hawaii Clean Energy PEIS (October 9, 2012) and the December 14, 2010 Notice of Intent for the Hawaii Interisland Renewable Energy Program (February 28, 2011).

Based on our review of the Draft PEIS, we have rated the document as *Environmental Concerns – Insufficient Information* (EC-2). Please see enclosed *Summary of EPA Rating Definitions.* The EPA strongly supports the implementation of energy efficiency and conservation measures, as well as the further development of renewable energy resources in the state of Hawaii, provided that projects are well-planned and located to minimize adverse environmental impacts.

In reviewing the Draft PEIS, we have identified additional information needed to provide greater clarity and understanding of potential impacts. As a cooperating agency, we would like to work closely with DOE to achieve this. We recommend that additional data on current energy usage and renewable energy generation be included in the Final PEIS, as this will provide a baseline from which to assess the additional need for clean energy activities and technologies. Because the siting of renewable energy development can have great influence on potential environmental impacts, we continue to promote EPA's *RE-Powering America's Land,* an initiative that encourages renewable energy development on contaminated lands, landfills, and mine sites. We believe that Hawaii could prioritize the use of such lands and other disturbed and degraded lands to a greater extent to achieve the goals of the HCEI. Finally, we would like to see greater clarity on permitting requirements within the document.

We appreciate the opportunity to review this Draft PEIS and are available to discuss our comments. When the Final PEIS is released for public review, please send one hard copy and one CD-ROM to the address above (Mail Code: ENF-4-2). If you have any questions, please contact me at 415-972-3521, or contact Ann McPherson, the lead reviewer for this project. Ann can be reached at 415-972-3545 or mcpherson.ann@epa.gov.

Sincerely,

Cornell Dennis

FOR Kathleen Martyn Goforth, Manager
Environmental Review Section

Enclosures: Summary of the EPA Rating System
EPA's Detailed Comments

SUMMARY OF EPA RATING DEFINITIONS*

This rating system was developed as a means to summarize the U.S. Environmental Protection Agency's (EPA) level of concern with a proposed action. The ratings are a combination of alphabetical categories for evaluation of the environmental impacts of the proposal and numerical categories for evaluation of the adequacy of the Environmental Impact Statement (EIS).

ENVIRONMENTAL IMPACT OF THE ACTION

"LO" (Lack of Objections)

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

"EC" (Environmental Concerns)

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

"EO" (Environmental Objections)

The EPA review has identified significant environmental impacts that should be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

"EU" (Environmentally Unsatisfactory)

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potentially unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the Council on Environmental Quality (CEQ).

ADEQUACY OF THE IMPACT STATEMENT

"Category 1" (Adequate)

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

"Category 2" (Insufficient Information)

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analysed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

"Category 3" (Inadequate)

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analysed in the draft EIS, which should be analysed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

*From EPA Manual 1640, Policy and Procedures for the Review of Federal Actions Impacting the Environment

U.S. EPA DETAILED COMMENTS ON THE HAWAII CLEAN ENERGY DRAFT PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT, STATE OF HAWAII, JULY 17, 2014

Energy Usage and Anticipated Energy Demand in Hawaii

According to the Draft Programmatic Environmental Impact Statement, the Hawaii Clean Energy Initiative goals are to meet 70 percent of Hawaii's energy needs by 2030 through clean energy efforts including energy efficiency and conservation measures (30 percent) and renewable energy generation from local sources (40 percent). However, the Draft PEIS does not identify the baseline or current energy usage, anticipated growth, or anticipated demand for energy in the state of Hawaii, or for each island. In some cases, the Draft PEIS discloses the amount of renewable energy that is being produced in Hawaii for a given technology and provides estimates for the amount of renewable energy that could be developed. However, this information is not provided for all technologies, nor is it easy to locate within the document. Without this type of background information, it is unclear how much renewable energy generation is ultimately necessary to meet the HCEI goals and which technologies are most suitable. Providing background information on renewable energy, and other topics, would provide a much needed framework for decision-makers and the public regarding future direction for clean energy activities and technologies in the state. This information should be tabulated, summarized, and readily comparable in the Final PEIS.

> *Recommendations:*
> Provide and discuss the baseline or current energy usage, anticipated growth, and anticipated demand for energy in the state of Hawaii, and for each island.
>
> Quantify the amount of renewable energy generation that will be needed to meet the HCEI goals.
>
> Discuss current levels of renewable energy generation for each technology in the state of Hawaii, and for each island, and provide estimates for the amount of renewable energy that could be developed for each technology presented. Include estimates for rooftop solar on residential and commercial buildings.

Renewable Energy Development on Disturbed and Degraded Lands

While Section 3.5.5.1 of the Draft PEIS briefly mentions that future renewable energy projects should consider the use of degraded lands, the document does not discuss how Hawaii could better use such lands as a component of energy development. The document also does not describe the extent that these lands could be used to achieve the goals of the HCEI. Maximizing the use of previously disturbed lands is listed as a Best Management Practice related to land use (pg. 3-190). As noted, the U.S. Environmental Protection Agency has implemented *RE-Powering America's Land*,[1] an initiative to encourage renewable energy development on current and formerly contaminated lands, landfills, and mine sites when the development is aligned with the community's vision for the site (pg. 3-190). Using EPA's RE-Powering Mapper,[2] a series of Google Earth geographically-referenced KMZ files, it is possible to view information about renewable energy potential on contaminated lands, landfills, and mine sites, alongside other information contained in Google Earth. To date, the *RE-Powering Initiative* has identified 110 renewable energy installations on 103 contaminated lands, landfills, and mines in 31

[1] For additional information on EPA's *RE-Powering America's Land*, please use the following webpage: http://www.epa.gov/oswercpa/index.htm
[2] http://www.epa.gov/oswercpa/rd_mapping_tool.htm

states and territories with a cumulative installed capacity just over 709 megawatts.[3] Using data from both federal and state-tracked sites in Hawaii, EPA's team[4] recently screened for contaminated lands, landfills, and mine sites with favorable solar and wind energy potential and identified:

- 192 sites with utility-scale (> 6.5 MW) solar photovoltaic development potential;
- 366 sites with large-scale (>300 kW) solar PV development potential;
- 110 sites with utility-scale (>10 MW) wind energy potential;
- 39 sites with large-scale (> 5 MW) wind energy potential; and
- 226 sites with 1-2 turbine potential (>1 MW) wind energy potential.

Recommendations:
Describe how Hawaii could better use contaminated lands, landfills, mine sites, and other disturbed and degraded lands as a component of renewable energy development and the extent that these lands could be identified and prioritized to achieve the goals of the HCEI.

Include a list of the above identified sites in the Final PEIS.

Liquefied Natural Gas

The Draft PEIS discusses liquefied natural gas as an alternative transportation fuel, but not as a replacement for imported oil used to generate electricity. As noted in the Draft PEIS, Hawaii is the most oil-dependent state in the Nation with about 85-90 percent of its energy derived from imported petroleum and petroleum products. As part of its overall strategy to reduce dependence on petroleum and provide a lower cost to consumers, the Hawaii State Energy Office is looking at the importation of LNG as a possible complement to renewables in Hawaii's diverse energy portfolio. Natural gas has the potential to burn cleaner than imported oil, resulting in reduced stack emissions from existing oil-fired generating units. As such, LNG could be viewed as a transitional fuel and cleaner replacement of oil for electricity, but this will depend on how it is imported and used. For example, importing LNG in bulk via a conventional import and regasification terminal with injection into pipelines would be expected to have fewer emissions than importing LNG in containers and trucking the containers to generating units. LNG could also play an important role in allowing more renewables to be accommodated in Hawaii's energy system by making it easier and cheaper to follow fluctuating loads. Since the importation of LNG is currently being considered by several agencies in Hawaii, we recommend that it be addressed directly within the Final PEIS, with supporting information.

Recommendations:
Discuss, qualitatively, the potential for LNG as a transitional, cleaner replacement of oil for electricity within Hawaii, including:

- How utilizing LNG could support greater renewable energy integration.
- Infrastructure investments necessary to utilize LNG as an energy source.
- Feasibility of importing LNG from U.S. (West Coast), U.S. (Gulf Coast), Alaska, Canada, Australia, Mexico, Indonesia, or Asia.
- Pricing trends of natural gas and corresponding effects on importing/exporting LNG.

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[3] For additional information, please see the following webpage: http://www.epa.gov/oswercpa/newsletters/quarterly_newsletter_june_2014.pdf

[4] For more information, contact Adam Klinger via email at klinger.adam@epa.gov or visit http://epa.gov/renewableenergyland/

Permitting and Consultation Requirements

Technology-specific requirements for installing Sea Water Air Conditioning and Ocean Thermal Energy Conversion facilities include complying with environmental regulations involving water quality and marine habitat, as discussed in Section 2.3.1.5.3 (pg. 2-52) and Section 2.3.3.5.3 (pg. 2-130). As noted in the Draft PEIS, water quality impairment and cooling water intake for both technologies are regulated by the Clean Water Act Sections 316(b), 402, and 403. In addition, the Hawaii State Department of Health also has permitting responsibilities as noted below, which should be identified in the Final PEIS.

Recommendations:
Describe the Hawaii State Department of Health's permitting responsibilities with respect to National Pollution Discharge Elimination System permits as noted below in the *Permitting and Consultation Requirements* sections of the Final PEIS for both Sea Water Air Conditioning and Ocean Thermal Energy Conversion (pgs. 2-52 and 2-130).

- Clean energy projects within state waters would have to apply to the Hawaii State Department of Health at least 180 days prior to commencement of operations to receive an NPDES permit. The project would then have to meet all conditions set forth in their NPDES permit, including numeric effluent limitations established to protect water quality in the receiving water. Applicants for clean energy projects within federal waters would have to apply to the EPA for this permit.

- Clean energy projects would be required to demonstrate to the satisfaction of the Hawaii State Department of Health and EPA that the intakes for their facilities would meet 316(b) requirements prior to receiving their NPDES permit.

- In order to meet the state's water quality standards, a zone of mixing (per HAR 11-54-9) may need to be approved through the permitting process. The zone of mixing is a limited area around the discharge outfall where dilution would be allowed. The permittee would be required to conduct a dilution study to determine the dilution factor representative of the zone of mixing. The permit would then include conditions or limitations with consideration of the dilution factor. If an acceptable zone of mixing could not be established, alternatives such as treating the water (for example, nutrient removal or temperature adjustment) before discharge should be considered.

Information on CWA Section 404 permitting for Sea Water Air Conditioning and Ocean Thermal Energy Conversion is located in Section 4.2.3.1.3 (pg. 4-19) and Section 6.5.4.1.1 (pg. 6-97), respectively; however, it is not discussed in the *Permitting and Consultation Requirements* sections in Chapter 2 (Section 2.3.1.5.3 and Section 2.3.3.5.3). This is also the case for three other technologies: Marine Hydrokinetics, Off-Shore Wind, and Undersea Cable.

Recommendations:
Discuss CWA Section 404 permitting responsibilities in the *Permitting and Consultation Requirements* sections within Chapter 2 of the Final PEIS for Sea Water Air Conditioning, Ocean Thermal Energy Conversion, Marine Hydrokinetics, Off-Shore Wind, and Undersea Cable.

Note that CWA Section 404 compensatory mitigation may be required for unavoidable impacts to species and their habitat such as coral reefs.

Describe best management practices that can be incorporated into future project-level analysis to minimize damage from moorings, anchors, anchor lines, and pipelines during construction, particularly in areas near coral reefs. Areas should be designated for moorings and anchors that specifically avoid impacts to corals. Areas of high coral value should be marked with buoys to ensure avoidance of those areas during construction.

At a distance of about 6 miles from shore, the primary permitting requirements for an OTEC facility would be a federal responsibility. According to the Draft PEIS, stipulations of the Coastal Zone Management Act and State certification requirements under CWA Section 401 would require that federal permitting actions comply with State standards, including in this instance, Hawaii water quality standards (WQS) (pg. 6-98). The text, as written, would seem to imply that state CWA Section 401 certification would be required for OTEC facilities in federal waters; however, state 401 certification is not required for discharges into federal waters. The Draft PEIS is also inaccurate in saying that OTEC facilities in federal waters must comply with state WQS; however, EPA might conclude that compliance with State WQS would be appropriate in order to comply with the CWA.

Recommendation:
Revise the text on page 6-98 to note that state CWA Section 401 certification is not required for discharges into federal waters, and that although state WQS would not strictly apply in federal waters, EPA could, nevertheless, consider using them in developing limits for its own permit.

The Draft PEIS indicates that there may be problems complying with WQSs, including the acute standard for chlorine (pg. 6-98). These concerns, however, are essentially dismissed, under the assumption that they would be effectively diluted (6-100).

Recommendation:
Add further information in the Final PEIS supporting the assumption that chlorine would be effectively diluted. Note that dilution values will need to be estimated at various distances from the representative OTEC facility.

Sea Water Air Conditioning

Discharges into Already Impaired Waters

The Draft PEIS provides general information on Sea Water Air Conditioning in Section 2.3.1.5 and Section 4.2. The Draft PEIS describes a system where deep cold seawater is pumped through a heat exchanger, and cooled fresh water is circulated in a closed loop through individual buildings or district cooling air conditioning systems. The warmed seawater is pumped back to the ocean where it is discharged at a shallow depth to ensure that it enters water of similar temperature in order to minimize impacts. Nutrient levels, however, are much higher in seawater pulled from greater depths than at surface level. As noted, the discharge from the sea water air conditioning system would be well over the Hawaii state standards and would be expected to exceed standards on a continuous basis (pg. 4-18).

The Draft PEIS mentions that there is a lack of information on how ocean microbes would respond to the return of nutrient-dense deep water at, or closer to, the surface of the ocean. Of further consequence is the fact that some coastal receiving waters could be listed as being impaired for nutrients under Section 303(d).

Recommendation:
The Final PEIS should discuss the problems associated with discharging into already impaired waters, including NPDES permitting issues, and should discuss treatment options and discharge alternatives in greater detail.

Entrainment Analyses

According to the PEIS, the representative project would utilize a screened intake pipe (pg. 2-52). We note that entrainment of aquatic organisms can be a problem at the intake point, necessitating more detailed analysis.

Section 316(b) of the CWA requires reductions in environmental impact commensurate with utilizing a closed-cycle cooling system. This must be met/demonstrated by reductions in both impingement (fish kills caused by fish getting stuck on bar screens) and entrainment (kills resulting from small organisms passing through intake screens and into pumping equipment).

Recommendation:
The Final PEIS should note that sea water air conditioning will likely require an entrainment analysis and monitoring plan to assess any impacts from water intakes pipes in conjunction with compliance with CWA Section 316(b).

Air Quality

Greenhouse Gas Reporting

The Draft PEIS provides a greenhouse gas emission summary by island for Calendar Year 2007 in Table 3-10 (pg. 3-42). More recent GHG emission data for power plants is available as a result of EPA's GHG Reporting Program.[5] The 2012 GHG Reporting Program data set includes public information from facilities in nine industry groups that emit large quantities of GHGs, as well as suppliers of certain fossil fuels and industrial gases.

Recommendation:
Access the data available at EPA's GHG Reporting Program to retrieve GHG emission data from 2012. See http://ghgdata.epa.gov/ghgp/main.do.

EPA's Proposed Clean Power Plan

On June 2, 2014, the EPA proposed guidelines[6] to cut carbon pollution from existing power plants. Power plants account for roughly one-third of all domestic greenhouse gas emissions in the United States. While there are limits in place for the level of arsenic, mercury, sulfur dioxide, nitrogen oxides, and particle pollution that power plants can emit, there are currently no national limits on carbon pollution levels. The Clean Power Plan will be implemented through a state-federal partnership under which states identify a path forward using either current or new electricity production and pollution control policies to meet the goals of the proposed program.

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[5] For additional information on EPA's Greenhouse Gas Reporting Program, please use the following webpage: http://www.epa.gov/ghgreporting/

[6] For additional information on EPA's proposed Clean Power Plan, please use the following webpage: http://www2.epa.gov/carbon-pollution-standards/clean-power-plan-proposed-rule

Recommendation:
Consider EPA's proposed Clean Power Plan in the Final PEIS and, if known, discuss state actions that are consistent with the Plan.

Multi-Modal Transportation – System Efficiency

Section 2.3.4.6 focuses on multi-modal transportation and includes updates on public transportation, ride sharing, car sharing, and active transit options on each island. The discussion is focused on public transportation and different types of vehicles, mainly buses, which are currently used in Hawaii, and other options that are available, but does not address system efficiency. In order to be effective, a multi-modal system must offer alternative modes of transportation, as well as optimal connectivity. Optimizing connectivity and access to multiple modes of transit will result in improved access and increased use, resulting in a more efficient system overall. An additional important measure is the number of reduced single occupancy vehicle trips or reduced vehicle miles traveled, which reduces amount of fuel used and decreases congestion and associated localized air quality impacts.

Recommendations:
Expand the discussion on multi-modal transportation to include overall system efficiency, the ease of making connections between different modes of transportation, and optimal configuration of multi-modal transit options.

Discuss system efficiency in terms of reductions in: 1) single occupancy vehicle usage; and 2) vehicle miles traveled.

The Draft PEIS discusses active transit options, such as biking or walking, as well as ride sharing/car sharing, but it does not mention bike sharing (pg. 2-200; pgs. 2-208-210). Bike sharing is a low-cost, flexible public transportation service that provides on-demand access to a network of publically-rentable bicycles. Typically, public bicycles are distributed across a service area at fixed destination-based station locations. With the ability to make point-to-point trips, bike sharing systems generally accommodate shorter trips that replace less efficient auto and transit trips.

Recommendation:
Include bike sharing as an example of multi-modal transportation and elaborate accordingly.

Description of Potential Construction and Operation Impacts

Chapter 3 describes the affected environment and also includes a short discussion about the construction and operation impacts that would be expected to typically occur for each environmental resource area for common construction projects, regardless of the renewable energy technology or activity employed (pg. 3-1). Impacts that would be unique to a specific activity or technology are evaluated in subsequent chapters (4-8). As presented, it is difficult to understand what, exactly, are the potential impacts that are specific to an activity or technology, as opposed to those that are associated with most construction and operation activities. Furthermore, the discussion does not capture the range of potential impacts for construction and operation activities, since this will vary significantly across technology/activity.

Summary Tables S-8 and Table S-9a and 9b list environmental impacts for 13 selected technologies and activities, but similar information for other activities examined in the PEIS is not included. For example, these tables do not include any activities from alternative transportation fuels and modes, although 30 % of the energy consumed in Hawaii is used for ground transportation.

Recommendations:
Provide a qualitative discussion of potential impacts from construction and operation activities for each technology/activity, highlighting the extent and range of potential impacts.

Ensure that the Summary provides adequate attention to those activities and technologies that were examined in detail within the Final PEIS.